



# Catalog

2023-2024

Go Far,  
Close to Home.

[www.clackamas.edu](http://www.clackamas.edu)



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# WELCOME TO CLACKAMAS COMMUNITY COLLEGE!



With an education from CCC, you can go anywhere. Whether your goal is to complete a bachelor's degree, to gain the skills to get a job, or to improve your skills to get a better job, Clackamas will provide the classes and the support to get you there.

Our staff and faculty are here to help you navigate college from application to registration to graduation. Our academic advisors will keep you on track, helping you get the courses you need when you need them.

Need help paying for college? Our financial aid office can assist you in filling out and submitting your financial aid application, and the CCC Foundation offers scholarships each year to students like you. There are more than 225 scholarships available with just one application, and you don't need to have a perfect GPA to qualify.

Clackamas has the programs, instruction, and committed faculty and staff to make sure you reach your goals. You'll also find a variety of services to support your classes, such as tutors, computer labs, counselors and more.

If you bring your imagination and your commitment, you can succeed at CCC, where we offer an Education That Works.

**Dr. Tim Cook**

*President of Clackamas Community College*

*Clackamas Community College is accredited by the Northwest Commission on Colleges and Universities.*

*Accreditation of an institution of higher education by the Northwest Commission on Colleges and Universities indicates that it meets or exceeds criteria for the assessment of institutional quality evaluated through a peer review process. An accredited college or university is one which has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.*

*Accreditation by the Northwest Commission on Colleges and Universities is not partial but applies to the institution as a whole. As such, it is not a guarantee of every course or program offered or the competence of individual graduates. Rather, it provides reasonable assurance about the quality of opportunities available to students who attend the institution.*

*Inquiries regarding an institution's accredited status by the Northwest Commission on Colleges and Universities should be directed to the administrative staff of the institution. Individuals may also contact:*

*Northwest Commission on Colleges and Universities  
8060 165th Avenue N.E., Suite 100  
Redmond, WA 98052  
(425) 558-4224  
[www.nwccu.org](http://www.nwccu.org)*

Please note: The information in this catalog reflects current programs, requirements, and costs. These are all subject to change, and Clackamas Community College reserves the right to make any necessary revisions in the information contained here without prior notice.

# ACADEMIC CALENDAR

## 2023-2024 Academic Calendar

### 2023 Summer Term

Event	Date
Term Begins	Monday, June 26
Juneteenth holiday (College closed)	Monday, June 19
Independence Day holiday (College closed)	Tuesday, July 4
Labor Day holiday (College closed)	Monday, Sept. 4
Term Ends	Saturday, Sept. 9

### 2023 Fall Term

Event	Date
In-service week (College closed at 8 a.m.-12 noon Tuesday and Wednesday)	Monday-Friday, Sept. 18-22
Term Begins	Monday, Sept. 25
Veterans Day holiday (Harmony-Oregon City campuses closed)	Friday, Nov. 10
Thanksgiving holiday (College closed)	Thursday-Friday, Nov. 23-24
(Wednesday evening classes, beginning at 4 p.m. or later, are canceled prior to Thanksgiving.)	
Final Week	Monday-Saturday, Dec. 4-9
Term Ends	Saturday, Dec. 9
Holiday (College closed)	Monday, Dec. 25 & Tuesday, Dec. 26
New Year's Day holiday (College closed)	Monday, Jan. 1

### 2024 Winter Term

Event	Date
Term Begins	Monday, Jan. 8
Martin Luther King Jr. holiday (Harmony-Oregon City campuses closed)	Monday, Jan. 15
Presidents Day (Harmony-Oregon City campuses closed)	Monday, Feb. 19
Final Week	Monday-Saturday, March 18-23
Term Ends	Saturday, March 23
Spring break	March 25-29

### 2024 Spring Term

Event	Date
Term Begins	Monday, April 1
Memorial Day (College closed)	Monday, May 27
Final Week	Monday-Saturday, June 10-15
GED & Adult High School Diploma Graduation Ceremony	Thursday, June 13
College Certificate & Degree Graduation Ceremony	Friday, June 14
Term Ends	Saturday, June 15



# WHO WE ARE

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## Purpose

Creating lifetime opportunities for success through responsive education.

## Mission

To serve the people of the college district with high quality education and training opportunities that are accessible to all students, adaptable to changing needs, and accountable to the community we serve.

The college's mission is implemented with a commitment to being accessible, adaptable, and accountable.

### The college endeavors to be accessible by:

- Maintaining an open-door admissions policy
- Keeping tuition and fees as low as possible and maintaining financial aid programs
- Informing our public about available programs and services
- Encouraging student success through appropriate course placement, effective instructional strategies, recognition of diversity of learning styles and commitment to student support
- Surmounting the geographical, physical, educational, psychological and financial barriers that exist for district citizens
- Encouraging free and open exchange of thoughts and ideas
- Welcoming students and staff of diverse backgrounds and cultures.

### CCC is:

- Accredited by the Northwest Commission on Colleges and Universities
- A publicly supported, community-based organization, governed by a locally elected Board of education
- Operating within available resources from student tuition and fees, local property taxes, state funds, and additional resource development activities (i.e., state and federal grants, individual and corporate gifts, etc.)

### The college endeavors to be adaptable by:

- Asking district citizens, businesses and other community groups what programs and services are needed
- Maintaining flexibility in planning, budgeting, programming and staffing practices so resources can be shifted as needs change
- Cooperating with other organizations to respond to common challenges
- Maintaining instructional and student support programs which recognize the diversity of learning and cultural styles
- Building productive partnerships with business and industry

### The college endeavors to be accountable by:

- Maintaining appropriate standards of performance for all programs, courses and services
- Involving citizens in the budget process, the planning process and in program development and review
- Conducting regular performance reviews for all college staff members
- Continuing efforts to make the most effective use of college resources

- Evaluating the effectiveness of educational programs and services by measuring student outcomes

## Ethics

Clackamas Community College is dedicated to personal growth and academic excellence. Each member of the college community—students and staff alike—shall strive to:

- Recognize the inherent goodness of all people and honor the humanity that joins us
- Practice personal and academic integrity, respecting the dignity, rights and property of all persons
- Encourage diversity, striving to learn from differences in people, ideas and opinions
- Demonstrate concern for others, their feelings and their needs, and treat them as we wish to be treated ourselves

## Goals

The college has established the following goals to guide our planning:

### *Breadth of service*

By responding effectively to the needs of our varied constituencies

### *Quality of education*

By striving to achieve the highest quality of teaching, learning and student success

### *Commitment to values*

By aligning our organizational systems to the achievement of our Institutional Values

### *A healthy organization*

By promoting a strong sense of community with a commitment to communication, continuous learning and improvement

### *Resources to succeed*

By securing and sustaining human and financial resources and facilities to fulfill our mission

## Values

In order to ensure quality service to our community and students and a fulfilling work environment for our staff, we subscribe to the following institutional values:

## Community

The college staff holds the institution in trust for the citizens of the district. We believe that:

- Our service and instruction shall always strive to meet the highest standards
- The college exists in a dynamic environment that encourages innovation, self-evaluation and continuous improvement
- The preservation of the college in the pursuit of its mission must take priority over individual concerns while safeguarding the rights and dignity of staff or students
- Academic freedom and the free exchange of ideas are essential elements of the college

## Students

The college exists to enable students to earn a college education, to prepare for the world of work and to learn how to learn. We believe that:

- Students can grow toward full potential as they experience the joys of discovery and participate in the rigors of study
- All students possess inner resources which can be developed and refined
- Students have the right to enroll in classes appropriate to their ability levels
- Students must take an active role in their own learning to make their educational experiences meaningful
- Students should respect the diversity and dignity of all persons

## Staff

All college personnel must contribute to and support the educational mission of the college. We believe that:

- Every staff member is a problem solver, with the right and the responsibility to identify and resolve issues they encounter on the job
- Staff members must develop and maintain a strong interest in the growth of students and the community we serve
- Effective communication and cooperation among staff members is necessary to fulfill the college mission
- Staff members are responsible for seeking opportunities for continued professional growth
- The college is responsible for providing professional development opportunities for staff
- Each staff member is entitled to fair and honest treatment by the college

## Diversity

The college is committed to building awareness of cultural diversity on our campus and in our community. We believe in:

- Respecting the inherent right of all persons to live with dignity and freedom
- Respecting individual rights of expression
- Setting a standard for the larger community by promoting tolerance, communication and understanding among people with differing beliefs, color, gender, cultures and backgrounds
- Encouraging affirmative action for students and staff
- Providing opportunities (curriculum development, art exhibits, theatrical presentations, special events) for increasing our awareness of cultural differences and personal lifestyle preferences within our college and the community

## Environment

The college accepts responsibility as a steward of the environment. In all areas of the college's operations, we will be proactive in protecting the environment. Our educational role is not only to teach environmental principles but also to model appropriate environmental behaviors. To implement our role, we will:

- Encourage students and staff to practice behaviors consistent with the preservation of a clean and safe environment
- Minimize the creation of waste and repair, reuse, and recycle materials whenever possible
- Provide facilities that are safe and free from environmental hazards

- Use the most energy efficient systems available in the physical operation of the college and make energy conservation a priority when planning new facilities and retrofitting existing facilities
- Purchase earth-friendly products whenever feasible and consider environmental effects when we plan investments in buildings, equipment, maintenance and repairs
- Maintain a landscape that provides opportunities for environmental awareness, learning and enjoyment by using the most environmentally compatible methods available for upkeep
- Evaluate our own performance through formal audits and by listening carefully to the observations of employees and others on ways we can improve

## Decision Making

The college maintains an open and inclusive organizational structure that enables all members of staff to participate in the decision-making process. We believe that:

- Institutional direction is driven by information received from the staff, the students and the community
- All employees should have a clear understanding of how they are connected to the decision-making process
- We achieve a balance of decentralized and centralized decision making
- We maintain a dynamic and continuous organizational audit with the goal of continuous improvement
- We are flexible and able to develop contingency plans to adjust to a changing environment
- We are constantly in the process of defining and dispelling ambiguity but are able to accept a certain amount of uncertainty
- We are constantly seeking direction from the community in policy and curriculum development



# Clackamas At A Glance

Numbers reflect 2021-22 data unless otherwise noted.

## Service Area

**Clackamas County Population:** 418,577 (US Census Bureau, 2021: 5-Year Estimates)

**CCC District Population:** 352,927 (All of Clackamas County except Lake Oswego, Sandy, Damascus, and Boring school districts)

### Enrollment

### Enrollment Statistics

Type	Number
Headcount	18,842
Fall Full-time students	1,600
Fall Part-time students	5,940
Fall Non-credit students	3,692
Full-time equivalence	4,578.6
Average age, all students	23
Average age, full-time students	20
Known females	53%
Known males	47%
Non-Binary	< 1%
Racial/ethnic known students of color in student body	21%
Degrees/certificates awarded	982

For more information on these and other college statistics, contact the Office of Institutional Research & Reporting at 503-594-6140. Financial aid information does not include institutional or scholarship aid. **Note:** Demographics are provided for students who reported information to the college.

### Programs

**Career Technical:** CCC offers more than 100 one-year Certificate of Completion and/or two-year Associate of Applied Science degree programs in career technical career areas.

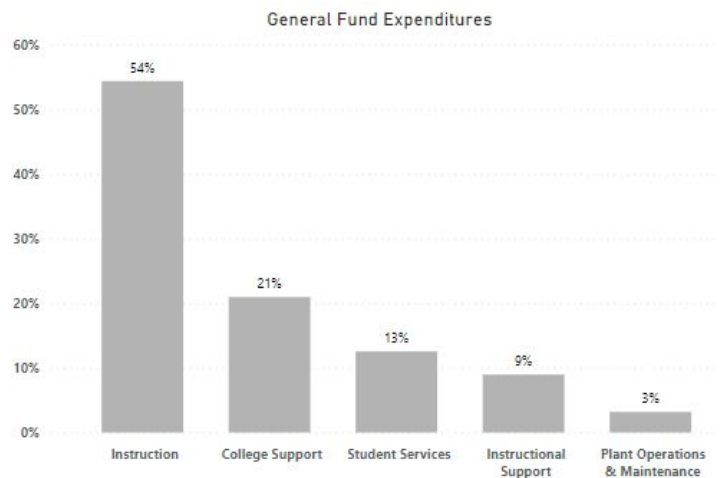
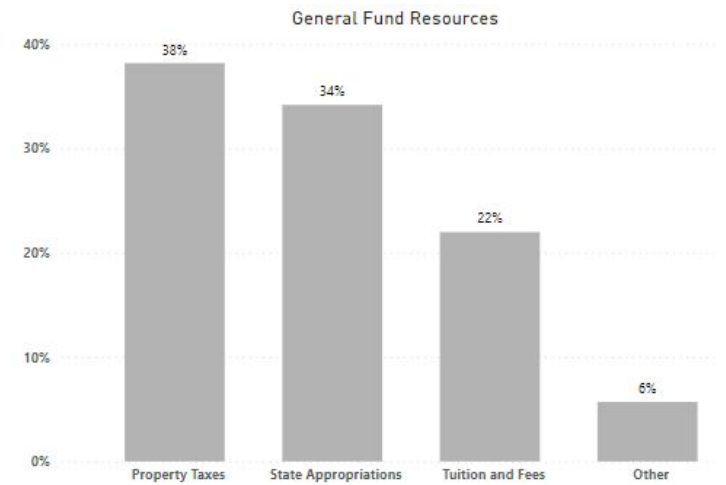
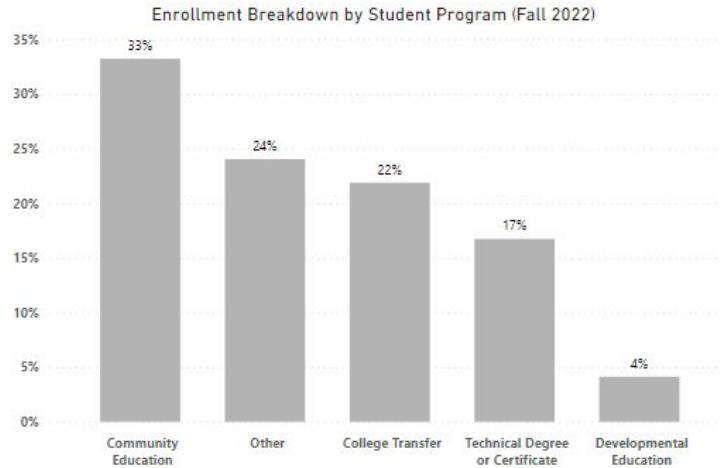
**College Transfer:** CCC offers the two-year Associate of Arts Oregon Transfer degree, completion of which allows the student to meet the general education requirements of the baccalaureate degree program, and have junior standing for the purposes of registration at any public university in Oregon.

CCC offers the two-year Associate of Science degree, completion of which allows students to take the first two years of articulated coursework at Clackamas Community College and transfer to specific four-year institutions to complete a degree in the designated discipline.

**Literacy/Basic Skills:** CCC offers individualized instruction in basic academic and study skills, including Adult High School Diploma, General Education Development (GED), English for Speakers of Other Languages (ESOL), alternative schools, and Life & Career Options.

**Community Education:** CCC offers non-credit personal interest and enrichment courses through district community schools and parks and recreation locations throughout Clackamas County.

**Business Training:** CCC offers contracted employee training through the Customized Training & Development Services program and assistance to small businesses through the Small Business Development Center.



# Departments and Offices

College Main Number: 503-594-6000

Building <sup>1</sup>	Department/Office	Phone
<b>ABE/GED</b>		
D	Oregon City	503-594-3028
H	Harmony	503-594-0633
D	Adult High School Diploma - Oregon City	503-594-0633
<b>Academic Advising</b>		
WC	Oregon City	503-594-3475
H	Harmony	503-594-0623
W	Wilsonville	503-594-0959
<b>Bookstore</b>		
M	Bookstore - Oregon City	503-594-6500
H	Bookstore-Harmony	503-594-0647
<b>Testing/Assessment Center</b>		
WC	Oregon City	503-594-3283
HW	Harmony	503-594-0636
W	Wilsonville	503-594-0940
<b>**</b>		
WC	Admissions & Recruitment/Admissions Center	503-594-3284
WC	Advanced College Credit	503-594-3161
T/W	Apprenticeship	503-594-3031
C	Arboriculture	503-594-3292
AC	Art	503-594-3034
R	Athletics	503-594-3043
B	Automotive	503-594-3047
S	Business	503-594-3071
HW	Business Development Center	503-594-0738
B	Business Office	503-594-3085
WC	Cafeteria	503-594-6090
M	Campus Safety Office	503-594-6650
WC	Campus Tours	503-594-6249
WC	Career Center	503-594-6001
I	Career Technical Education	503-594-3441
F	Child Care Center	503-657-9795
	Child Care Info & Referral	503-253-5000
RR	The Clackamas Print Newspaper	503-594-3261
N	Communication Studies	503-594-6489
H	Community Education	503-594-0627
	Community Garden	503-594-3040
D	Computer Lab (Academic)	503-594-6632
S	Computer Lab (Open)	503-594-6632
SA	Computer Lab Science	503-594-3163
S	Computer Science	503-594-3071
WC	Cooperative Work Experience	503-594-3511
WC	Counseling	503-594-3176
HW	Criminal Justice/Corrections	503-594-3203
P	Customized Training & Development	503-594-3200
AC	Digital Media Communications	503-594-3034
WC	Disability Resource Center	503-594-6357
M	Distance Learning	503-594-6310



<b>Building<sup>1</sup></b>	<b>Department/Office</b>	<b>Phone</b>
F	Early Childhood Education & Family Studies	503-594-3203
F	Education	503-594-3203
I	Electronics & Microelectronics	503-594-3318
T	Emergency Management	503-594-3539
W	Energy & Utility Resource Management	503-594-0942
P	Engineering	503-594-3345
RR	English	503-594-3254
D	English for Speakers of Other Languages (ESOL)	503-594-3234
WC	Enrollment and Graduation Services	503-594-6100
ELC	Environmental Learning Center	503-594-3015
B	Environmental Safety & Health	503-594-3322
G	Facility Scheduling	503-594-3308
WC	Financial Aid Office	503-594-6100
C	Gerontology	503-594-3203
B	GIS	503-594-3318
R	Gym	503-594-3043
H	Harmony Campus Registration/Information	503-594-0620
H	Health Services	503-594-0650
WC	High School Connections	503-594-3161
C	Horticulture	503-594-3292
B	Human Resources/Employment Opportunity	503-594-3458
C	Human Services	503-594-3203
I	Industrial Technology	503-594-3318
B	Instructional Media Services	503-594-3500
C	Landscape	503-594-3292
D	Learning Center	503-594-6191
D	Library-Circulation Desk	503-594-6323
D	Library-Reference Desk	503-594-6042
WC	Life & Career Options	503-594-3176
S	Math	503-594-3395
M	Moodle Help	503-594-6310
M	Music	503-594-3337
H	Nursing	503-594-0650
WC	Office of Education Partnerships	503-594-3161
C	Organic Farming	503-594-3292
P	Pauling Center Gallery	503-594-3034
R	Physical Education	503-594-3043
B	President's Office	503-594-3002
WC	Registration and Records	503-594-6100
I	Renewable Energy Technology	503-594-3318
WC	Scholarship Office	503-594-3421
DJ	Science	503-594-3345
D	Skills Development	503-594-3028
M	Social Science	503-594-3403
WC	Student Accounts	503-594-6100
WC	Student Government	503-594-3040
WC	Student Life & Leadership	503-594-3040
WC	Student Support Services	503-594-3475
N	Theater/Performing Arts	503-594-3153
D	Tutoring Services	503-594-6191
WC	Veterans Educational Benefits	503-594-3438

Building <sup>1</sup>	Department/Office	Phone
WC	Veterans Education & Training Center	503-594-3438
B	Vice President, College Services	503-594-3010
B	Vice President, Instructional & Student Services	503-594-3020
P	Water & Environmental Technology	503-594-3345
T	Welding	503-594-3318
T	Wildland Fire Science	503-594-3539
W	Wilsonville Registration/Information	503-594-0940
P	Workforce Development Services	503-594-6246
M	World Languages	503-594-3403
D	Writing Center	503-594-6275

<sup>1</sup> Find building code key on [campus map page](#)

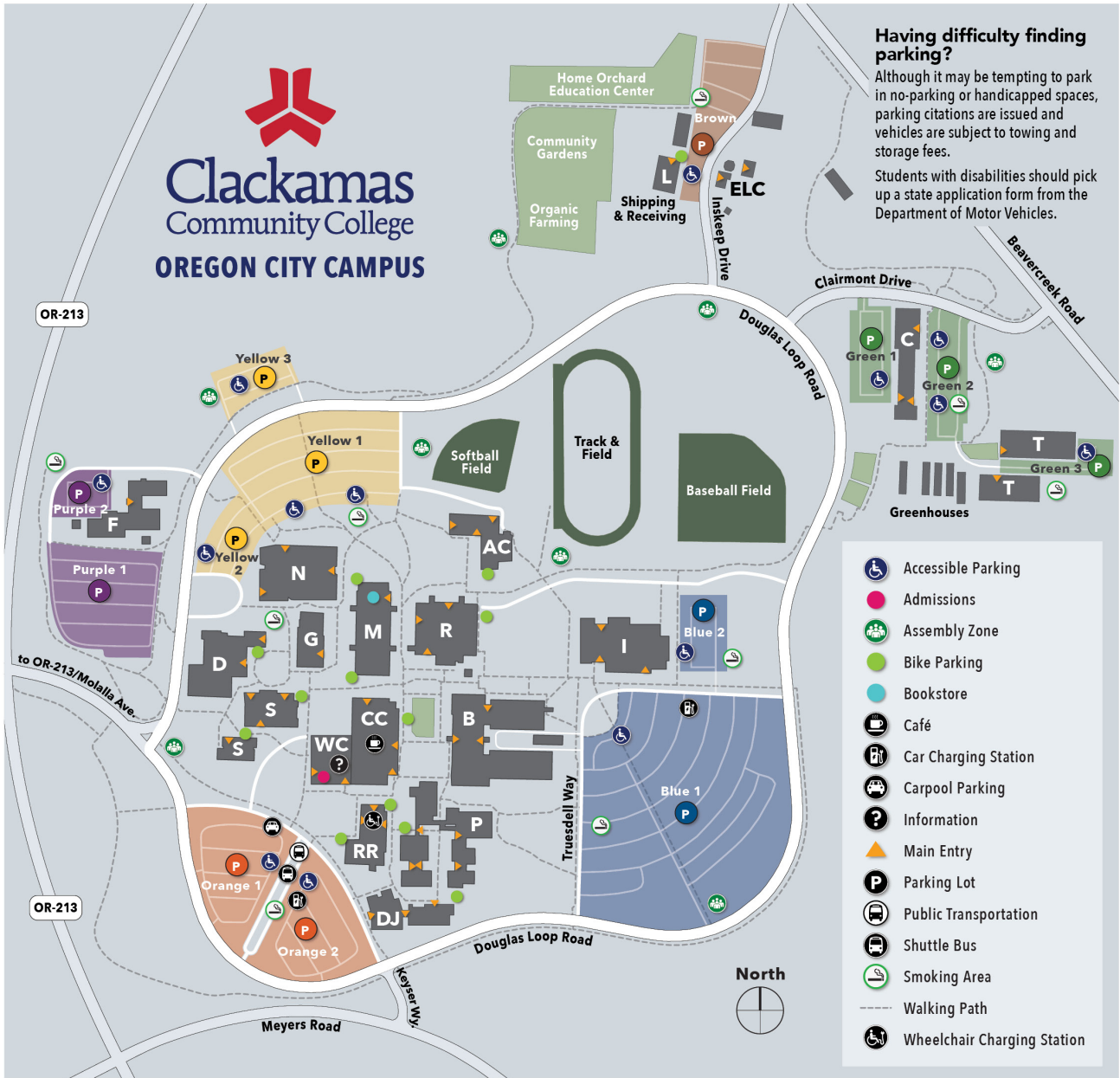
## Campus Safety

In an emergency or life-threatening situation, dial **911** from any phone.

Campus Safety Office, ext. **6650** or call **503-594-6650**.



# Campus Maps



### BUILDING CODES and SERVICES

- Art Center (AC)**
- Barlow Hall (B)**
  - Foundation
  - Human Resources
  - President's Office
- Clairmont Hall (C)**
  - Connections with Business and Industry
- Community Center (CC)**
  - Advising
  - Career Services
  - Cougar Café
  - Disability Resource Center
  - Multicultural Center
  - Student Government
  - VET Center
- DeJardin Hall (DJ)**
- Dye Learning Resource Center (D)**
  - Library
- Environmental Learning Center (ELC)**
- Family Resource Center (F)**
  - Child Development Center
- Gregory Forum (G)**
- Holden Industrial Technology Center (I)**
- Lewelling (L)**
  - Campus Services
  - Shipping & Receiving
- McLoughlin Hall (M)**
  - Bookstore
  - College Safety
- Niemeyer Center (N)**
  - Alexander Art Gallery
  - Osterman Theatre
- Pauling Center (P)**
  - Workforce Services
- Randall Hall (R)**
  - Athletics Center
- Roger Rook Hall (RR)**
  - Admissions Center
  - Financial Aid
  - Registration/Records
  - Student Accounts
  - Testing Center
- Streeter Hall (S)**
- Training Center (T)**
- Wacheno Welcome Center (WC)**

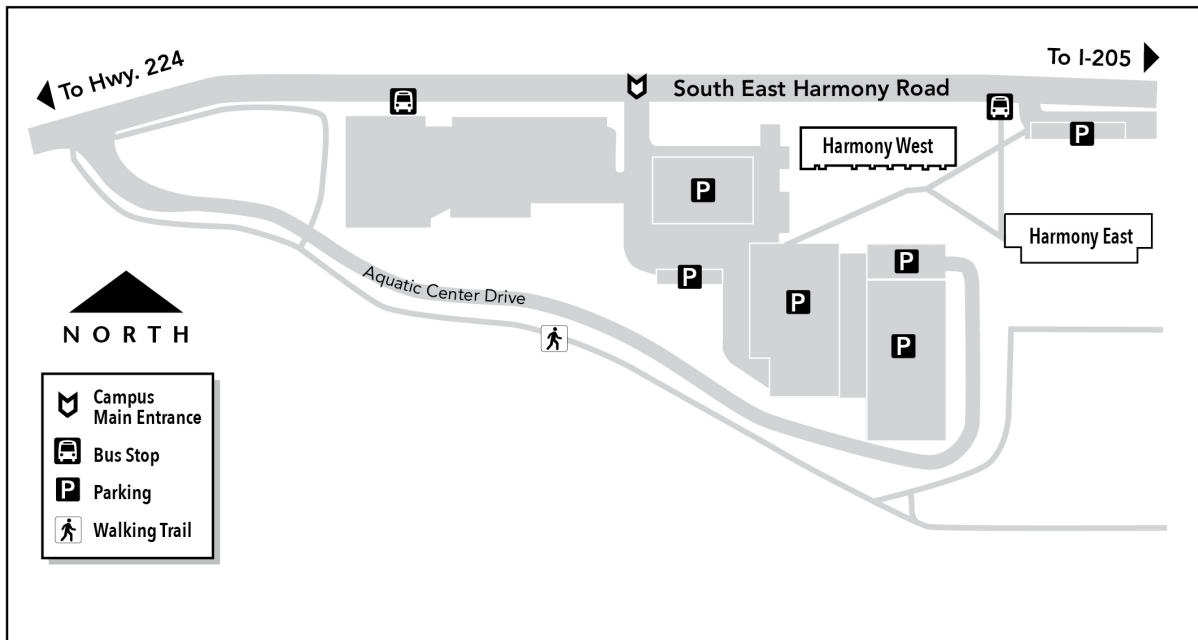
### CCC CAMPUS SITES

- CCC at Harmony Community Campus**  
7738 SE Harmony Road  
Milwaukie, OR 97222
- CCC Oregon City**  
19600 Molalla Ave.  
Oregon City, OR 97045
- CCC Wilsonville Campus**  
29353 SW Town Center Loop E  
Wilsonville, OR 97070

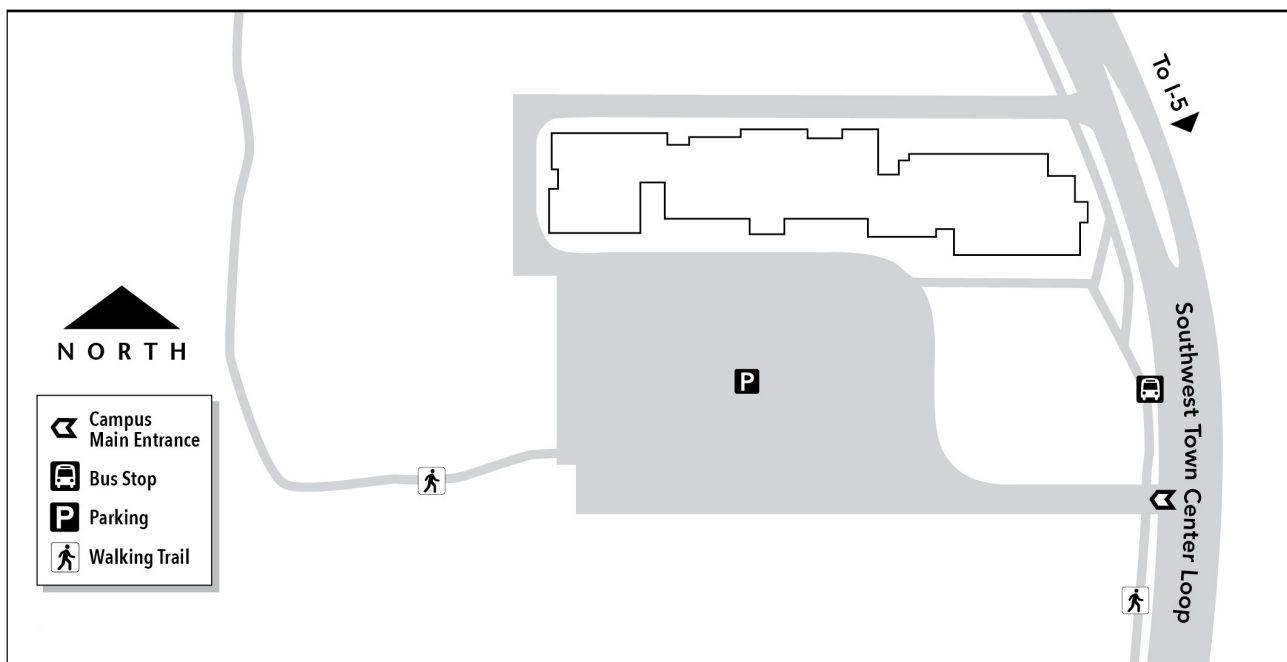
### CCC OFF-CAMPUS SITES

- Canby Applied Technology Center**  
721 SW Fourth St., Canby, OR 97013
- Estacada High School**  
355 NE 6th, Estacada, OR 97023
- Molalla Center**  
(behind Molalla Public Library)  
201 East Fifth, Molalla, OR 97308

### Clackamas Community College Harmony Community Campus



### Clackamas Community College Wilsonville Campus





# GETTING STARTED

- [Admission \(p. 12\)](#)
- [Determine Course Placement \(p. 13\)](#)
- [Financial Aid & Scholarships \(p. 13\)](#)
- [Paying for Classes \(p. 15\)](#)
- [Registration \(p. 15\)](#)
- [Tuition and Fees \(p. 16\)](#)

## Admission

### Admissions Center

CCC Oregon Campus, Wacheno Welcome Center  
503-594-3284

Clackamas Community College has an open access admission policy and welcomes all students who can benefit from the instruction offered, regardless of their educational background. Adult enrollment (18 and older) is unrestricted. Students 17 and younger who have not completed high school or obtained a GED must comply with special enrollment requirements.

If you are working toward a degree or certificate click [here](#) to apply for admission online. Paper applications are available upon request. You should apply for admission six months prior to your start term.

## Transfer Students

CCC accepts college-level credits from regionally accredited colleges and universities recognized by the Council for Higher Education Accreditation (CHEA). These credits may be accepted for course placement, course equivalency, program requirements, and degree completion.

If you have taken classes at other colleges and would like this coursework reviewed for transfer credit at CCC, ask the college you previously attended to send a copy of your official transcript to Graduation Services. **Note:** If you want this coursework evaluated before you begin at CCC, apply for admission and send your previous college transcripts to CCC at least three months prior to when you want to begin classes.

## Credit for Prior Learning

You may have already completed college credits through several local and national programs, including Advanced Placement (AP), College Level Examination Program (CLEP) International Baccalaureate (IB), and the military. It is important to send exam scores or transcripts to Graduation Services at least 12 weeks prior to the term in which you will begin at CCC so your credits can be evaluated.

Any student receiving VA benefits while attending Clackamas Community College is required to obtain transcripts from all previously attended schools, as well as military transcripts, and submit them to the veterans' school certifying official for review of prior credit.

## International Students/Program for Intensive English (PIE)

CCC is approved by the Department of Homeland Security (DHS) to accept qualified students on an F-1 visa. Students wanting to pursue

a college-level course of study **must** submit proof of English language proficiency by one of the following:

- TOEFL score of a 61 iBT or higher
- IELTS score of 6.0 or higher
- Completion of two college-level (100 or above) courses in composition or writing with a C or better, taken at a U.S. post-secondary college or university

Participation in a college-level course of study is not guaranteed by meeting the above minimum requirements. To be admitted into college-level courses, a student must also achieve a placement test score of 70+ on the CCC writing placement test.

International students must also submit official transcripts from all prior U.S. post-secondary colleges or universities attended.

If you are unable to demonstrate English proficiency at the required level, you will be placed in the Program for Intensive English (PIE) and conditionally admitted to college-level courses of study.

Application materials and information are available at [www.clackamas.edu/international](http://www.clackamas.edu/international)

## Special Admission Programs

The following programs require a separate admission application:

- Degree Partnership Programs (four-year universities)
- International Students
- Dental Assistant
- Medical Assistant
- Nursing (RN)

Special admission programs often require prerequisite courses or skills assessments. Requirements, application dates, and deadlines are subject to annual change. Admission requirements and application materials for each program must be downloaded by visiting: [onlineapplication.clackamas.edu](http://onlineapplication.clackamas.edu).

## Degree Partnership Programs & Articulation Agreements

At CCC there are several ways in which the college partners with four-year colleges and universities to help make your transition from CCC to your institution of choice easier.

- You can co-enroll at one of four four-year institutions - Portland State University, Oregon State University, Western Oregon University, and Oregon Institute of Technology all offer the opportunity to be admitted and enrolled at the same time you attend CCC.
- Articulation Agreements are formal agreements between CCC and specific institutions. These agreements specify the courses that meet degree or program requirements at the receiving college or university.

## Students Younger than Age 18

To take high school or college classes at CCC, the following options are available:

- If you are 16 years of age or older and want to get your high school diploma or GED at Clackamas, contact the Skills Development Department, 503-594-3028.

- If you want to take college classes while still in high school, contact High School Connections, 503-594-3161.
- If you want to earn college credits for courses you are taking at your high school, contact your high school counselor or High School Connections, 503-594-3161.

## Determine Course Placement Testing and Placement Services

Visit [www.clackamas.edu/pass](http://www.clackamas.edu/pass) for more information or call for testing and placement hours.

CCC Oregon City Campus, Wacheno Welcome Center  
503-594-3283

CCC Harmony Community Campus  
503-594-0636

CCC Wilsonville Campus  
503-594-0940

### Testing

Testing Centers are located at each of the CCC campuses and provide professional testing services to the school and community. Depending on the site, a Testing Center may provide the following services:

- Proctored Exams - Exams taken under staff supervision (make-up exams, extended time, and by-arrangement)
- High School Equivalency Tests (GED)
- Tests for certification and licensure (Kryterion, Workkeys, Oregon Department of Agriculture, and PearsonVue)

### Placement Services

or call for testing and placement hours.

We are excited you are planning to take classes at Clackamas Community College. Placement Advising for Student Success (PASS) is our placement program promoting guided student placements into the highest-level math and writing course in which they are likely to succeed. Getting placed in the right class for you can save you time and money. Students will complete the online PASS Intake Survey and one of our PASS advisors will reach out to schedule a video/phone conference. Visit [www.clackamas.edu/pass](http://www.clackamas.edu/pass) for more information or call for testing and placement hours.

### Other Information about Placement tests

- CCC offers Accuplacer Next Generation placement tests at specific testing locations.
- Additional information about the placement tests can be reviewed at [www.clackamas.edu/testing/](http://www.clackamas.edu/testing/)

### Information about Standardized test scores

SAT and ACT test scores may be used for math and writing placements. Writing and Math score conversion charts are located at [www.clackamas.edu/testing/](http://www.clackamas.edu/testing/)

### Submit previous college credit to CCC

Completion of previous math and writing college credits may satisfy the placement process. Refer to Graduation Services for more complete information about the process for submitting official transcripts and

exam scores to CCC for credit evaluation. (This process may take up to 12 weeks.) Any of the following credits may be considered:

- International Baccalaureate (IB)
- Advanced Placement (AP)
- College Level Examination Program (CLEP)
- Advanced College Credit (ACC)
- DSST or military credit
- Transcripts from regionally accredited U.S. institutions

## Financial Aid & Scholarships Application Procedures

You may apply for financial aid anytime throughout the year. However, because certain financial aid funds are limited, you should apply as early as possible. The Free Application for Federal Student Aid (FAFSA) and the Oregon Student Aid Application (ORSAA) are available online beginning Oct. 1 each year. To be eligible for most types of financial aid, students must complete the FAFSA or ORSAA. These applications compile financial information and other details about students and families, which the U.S. Department of Education and the state of Oregon use to determine financial need and eligibility for various financial aid opportunities.

U.S. citizens and permanent residents applying for a federal or state grant, a work program or loan must complete a FAFSA. Apply online at [www.fafsa.gov](http://www.fafsa.gov). No fee is charged.

Undocumented Oregon residents complete the Oregon Student Aid Application (ORSAA) at [oregonstudentaid.gov](http://oregonstudentaid.gov) to determine eligibility for state-based financial aid programs. The ORSAA is for undocumented Oregon students, including students who have DACA (Deferred Action for Childhood Arrivals) status. No fee is charged to complete the ORSAA application.

Note: Do **not** complete the ORSAA if you are a U.S. citizen or a legal permanent resident with an Alien Registration number, as you will already be considered for Oregon-based financial aid through FAFSA.

After CCC receives the FAFSA or ORSAA data electronically, our financial aid staff will send you an email and post notifications in your myClackamas account (under Self Service - Financial Aid). You must check your account frequently during this process to ensure you have submitted all documents needed to process your financial aid request. Failure to do so could mean you don't have your aid when school begins.

Be sure to pay attention to the financial aid recommended deadlines as the process from application to award letter can take some time.

## Student Eligibility Requirements

You may be eligible for Federal financial aid if you:

- Are an admitted and enrolled student, whether full or part time;
- Are enrolled in an eligible program at least one year in length that leads to a degree or certificate;
- Have registered with the Selective Service (if required to do so);
- Have a high school diploma or GED; are not attending an elementary or secondary school;
- Are a United States citizen or an eligible noncitizen;

- Are not in default of any federal loan program; and
- Do not owe a repayment on any federal grant program

For the Federal Direct Loan program, you must be enrolled at least half time (six credits).

For a Pell Grant, you must be an admitted, degree or certificate-seeking student enrolled in one or more credits.

For the Oregon Opportunity Grant, you must be a resident of Oregon for a year prior to the start of school and enrolled at least half time (six credits).

## Program Eligibility Requirements

Eligible programs need to be at least one year in length (some exceptions apply) and must lead to a degree or certificate.

## Academic Standards and Eligibility

To receive financial aid, you must fulfill the standards of Satisfactory Academic Progress (SAP). Information regarding SAP requirements are available online at [www.clackamas.edu/admissions-financial-aid](http://www.clackamas.edu/admissions-financial-aid)

## Financial Aid Disbursement Policy

Financial aid is disbursed to a student's account at CCC to pay tuition, fees, and institutional charges, beginning the week following the census date. The census date is the first business day after the add/drop period. Enrollment is locked on the census date for financial aid purposes, and funding amounts are adjusted to pay for all degree-applicable courses on that date. Courses added after the census date will not be funded by financial aid, and students are liable for the charges. Financial aid is disbursed weekly throughout each term for aid not ready at the census date. If financial aid amounts disbursed exceed the balance due on the student's account at CCC, a credit balance refund will be sent to the student for the excess financial aid. Refunds are mailed to students or direct deposited to the student's bank account the last business day of the week in which disbursements are made. Funds are not available prior to this day.

## Federal Pell Grants

You may be eligible for up to \$7,395 a year in 2023-24, depending on the amount of federal funding available and limits set by the Department of Education (this is current as of this publishing). Awards are based on eligibility and enrollment status.

## Federal Supplemental Education Opportunity Grants

You may be eligible for up to \$1,000 a year. Part-time students (taking 6-11 credits a term) will receive smaller grants.

## Oregon Opportunity Grants

You must be enrolled for six or more credits to be eligible for Oregon Opportunity Grants.

## Oregon Promise Grants

The state of Oregon offers the Oregon Promise grant to incoming students who successfully complete the GED or earn their high school diploma shortly before enrolling in an Oregon community college. For more information or to apply, visit [oregonstudentaid.gov](http://oregonstudentaid.gov).

## Federal Work-Study

You may be eligible to receive an award to fund a paid part-time job through the college with a minimum of half-time enrollment (six or more credits). Jobs are available both on campus and in the community.

## Federal Direct Loans

Most students are eligible for Federal Direct Loan funds. The Federal Direct Loan is a federally guaranteed loan. First-year students (less than 45 credits completed) are eligible to borrow subsidized amounts up to \$3,500, and second-year students may borrow up to \$4,500 (actual amount is dependent on student budget criteria). The Office of Financial Aid and Scholarships provides information on unsubsidized Direct loans.

## Federal Parent Plus Loans

Your parent may be eligible to apply for a parent PLUS loan if your financial aid package is insufficient to cover the cost of attendance. Parent PLUS loans are loans borrowed and repaid by the parent of a dependent student and require a successful credit check. For more information or to apply for a parent PLUS loan, visit [www.studentloans.gov](http://www.studentloans.gov).

## Scholarships

503-594-6082  
[scholarships@clackamas.edu](mailto:scholarships@clackamas.edu)

Clackamas Community College offers various scholarship opportunities for students of all majors. For a complete list, visit [www.clackamas.edu/scholarships](http://www.clackamas.edu/scholarships). The following are a few types of scholarships we offer:

### High School Scholarships

Every year the CCC Foundation offers an Academic Incentive Scholarship, Opportunity Scholarship and an Honors Scholarship through each public high school in our district. Information about these scholarships is available at your local high school counseling or career center. Apply online Jan. 30 – April 14 at [www.clackamas.edu/scholarships](http://www.clackamas.edu/scholarships).

In-district high school students who compete in the annual Clackamas Regional Skills contest are eligible for CCC waivers. Partial, one-term tuition waivers are awarded to the top three winners in all categories of the competition. For more information, contact High School Connections at 503-594-3161 or [hsconnections@clackamas.edu](mailto:hsconnections@clackamas.edu).

### Special Tuition Scholarships

If you have special skills or plan to participate in extracurricular activities like art, athletics, speech, journalism, student government, music, theater, etc., you may be eligible for a tuition waiver. Contact the appropriate college department to find out how to apply.

### General Student Scholarships

The CCC Foundation funds more than \$500,000 in scholarships for new and returning students. The application is available at [www.clackamas.edu/scholarships](http://www.clackamas.edu/scholarships) and is open Jan. 30 through October annually. There are two deadlines; April 12 and Nov. 1. All scholarship applications completed by the deadline move on to the reading and scoring committee

### Private Scholarships

A variety of sources offer private scholarships. These scholarships are listed at [www.clackamas.edu/scholarships](http://www.clackamas.edu/scholarships).

## Veterans Benefits

CCC Oregon City Campus  
Wacheno Welcome Center  
503-594-3438  
[vetinfo@clackamas.edu](mailto:vetinfo@clackamas.edu)  
[www.clackamas.edu/veterans](http://www.clackamas.edu/veterans)

Our team at the Veterans Education and Training (VET) Center is committed to helping you access all the resources needed to make your educational goals a reality. If you are currently serving in the military, have ever served, or are a military family member, contact us to learn more and determine your eligibility for veterans benefits.

We will:

- Provide information about the many VA educational benefit programs and assistance with applying for these programs.
- Assist you with other resources available to veterans and their military family members, including community and college resources.
- Connect you with the many resources on campus and in the community to make your transition from military service to civilian life a success.
- Provide assistance with other veteran-specific educational resources, including state assistance and tuition waivers for family members of fallen service members.
- Help with active and reserve DOD military tuition assistance.

CCC's VET Center can help you get started today—your success is our only goal!

## Paying for Classes

### How Do I Pay for Classes?

**Pay Now:** Payment in full is due at the time of registration. Refer to [www.clackamas.edu/pay](http://www.clackamas.edu/pay) to learn how to make your payment.

**Pay Later:** Deferred Payment Plan. If you choose this option, payment in full is due by the payment deadline for the term. Refer to: <https://www.clackamas.edu/admissions-financial-aid/tuition-fees>. Accounts with a balance after this date will be charged a non-payment fee of \$100 and a hold will be put on your account the will prevent future registration.

#### Refund Policy

CCC provides full refunds if you drop your classes on time. We do not provide partial refunds. To receive a full refund **you** must drop your classes:

- During the first two weeks of the class for classes meeting 5 weeks or more
- During the first week of the class for classes meeting 3-4 weeks
- Before the class begins for classes meeting two weeks or less

Drop requests are processed via the official college Add/Drop form or your myClackamas account. Eligibility for a refund is determined by the date that your official request is received. Ceasing to attend class or verbal notification does not constitute an official drop. This refund policy is in effect for all classes, seminars and workshops.

If you have questions about an outstanding balance, contact the Accounts Receivables Office at 503-594-6068 or [staccounts@clackamas.edu](mailto:staccounts@clackamas.edu).

## Canceled Class

If your class is canceled you will be notified and officially dropped by Enrollment and Graduation Services. Your tuition and fees for this class will be adjusted appropriately.

## Registration

### Enrollment and Graduation Services Centers

**All Campus Locations**  
503-594-6074  
[registration@clackamas.edu](mailto:registration@clackamas.edu)

Registration is available for currently enrolled, returning and admitted students via your Self Service account, fax/mail-in, and in person.

Registration is based on the number of credits completed at CCC (credits completed at other colleges are not counted for registration purposes). Courses in progress during the current term do not count toward this total. You will be notified of your registration date and time through your myClackamas account and Self Service. The registration schedule is also printed in the **Class Schedule** each term. If you miss your registration window, you are able to register any time after that.

## To Change Your Schedule

### Adding and Dropping Classes

- You are required to obtain instructor permission (signature) after the course begins.
- You must officially drop courses you have registered for if you decide to stop going to class. Ceasing to attend class does not constitute official withdrawal! You will be held academically and financially responsible if you do not officially drop your courses. Official withdrawal is via Self Service or in person.

### Changing Grading Method

- You are required to obtain instructor permission (signature) after the course begins.
- To change your grading method (from graded to P/NP, or P/NP to graded), you must submit a request to Enrollment and Graduation Services by the Friday before finals week.
- To change to an audit, you must submit a request to Enrollment and Graduation Services by the Friday before finals week. For more information regarding the audit option, see **Audit (p. 19)**.

## Administrative Withdraw

- If you don't attend your class, instructors will drop you. Instructors may do this at any time during the first two weeks of the class. This is called administrative withdrawal.
- If an instructor does an administrative withdrawal, you may be granted a full refund of charges for the class.
- An instructor may administratively withdraw you from a course if you are unable to demonstrate fulfillment of the class prerequisite or corequisite.
- If you are utilizing financial aid or veterans benefits, you may owe a repayment. Please check with these offices for additional information regarding your enrollment status and entitlement to benefits.



- If you are administratively withdrawn from a course, you will be notified by Enrollment and Graduation Services.
- Students who are currently registered for a section (e.g., MTH-111Z Precalculus I: Functions) and do not pass the prerequisite (e.g., MTH-095 Algebra III) will be administratively withdrawn from the currently registered course (e.g., MTH-111Z Precalculus I: Functions) by the Enrollment and Graduation Services Office.
- Students may also be administratively withdrawn from classes due to conduct issues or due to a balance being owed to the college.

## Waitlist Procedure

Some CCC classes utilize a waitlist option. If the class you want to register for is full and it has a waitlist:

- Add your name to the waitlist via Self Service or in person.
- You will receive an email in your “student.clackamas.edu” email when a spot opens up and you are next on the waitlist
- Go to Self Service. The course that you were waitlisted for will now say “Register”.
- You will have 48 hours to respond to the invitation.
- You will be notified by email when you are added to a class.
- You are academically and financially responsible for the class if you no longer want to be in the class and don't drop it.

The following conditions may affect your eligibility for waitlist placement:

- Waitlist capacity has been met.
- There is a “hold” on your student record that restricts registration.
- There are course restrictions in place such as “Student Petition.”
- You are already registered in another section of the same course.
- There is a time conflict with the course you have selected.
- You have reached the maximum number of credits allowed (18) without additional authorization.
- Class has already begun.

## Tuition and Fees

### 2023-2024 Tuition and Fees

Please note that tuition and fee rates are subject to change without prior notice.

Tuition Type	Rate	Comment
In-State	\$121 per credit	Applies to U.S. citizens or immigrants with a residency status (90 days at that address prior to the start of the term) in Oregon, Idaho, California, Nevada and Washington.
Out-of-State	\$291 per credit	Applies to international students and students residing in states which do not border Oregon.

Fee Type	Rate	Comment
General Student and Technology Fee	\$13 per credit	Supports many CCC student activities including athletics, child care, instructional technology and student government
College Services Fee	\$30 per term	Non-refundable. Applies to credit courses only. The College Services Fee covers the cost of various services including graduation, parking, shuttle, testing and transcripts.

Non-Payment Fee \$100 per term Applied after the sixth week of the term if a balance is owed to the college.

Non-Refundable Third Party Billing Fee \$15 Assessed on any student account where CCC is billing an outside business/organization for tuition and charges.

Returned Bank Item \$25 each item Fee for returned checks payments.

Course Fees Varies Certain classes have special fees in addition to tuition and the general fee. These are listed in the “Course Fee” column in the credit course listing in the Class Schedule.

## Credit for Prior Learning

Type	Rate
Challenge Exam	\$50 flat fee plus \$25 per credit
Portfolio	\$50 flat fee plus ½ of the current tuition per credit
Other (Non-Portfolio, NonChallenge Exam)	\$50 flat fee plus ½ of the current tuition per credit

## Factors that Determine Your Tuition

### In-State Tuition

To qualify as an in-state student for tuition purposes, you must be a U.S. citizen, immigrant or permanent resident who has established and maintained residency in Oregon, California, Idaho, Nevada or Washington at least 90 days prior to the first day of classes. A student registered as an aboriginal with an Oregon tribe will qualify for in-state tuition. A minor student whose parent(s) or guardian(s) is a bona fide Oregon resident will qualify for in-state tuition.

## Out-of-State Tuition

You are an out-of-state student for tuition purposes if you are a U.S. citizen, immigrant, or permanent resident who has not established residency in Oregon, California, Idaho, Nevada or Washington 90 days prior to the first day of classes or you are an international student/visitor.

You are an international student if you are a citizen of another country here on anything other than an immigrant visa. You will be required to have an I-20 to attend college.

International students do not become residents regardless of the length of residency within the district.

Note: If you plan to attend a public university after CCC, it is important to contact that institution prior to enrolling at CCC. Residency criteria at public universities are different from the community colleges and attending CCC could impact your ability to establish residency at the universities.

## The Veterans "Choice Act"

Any student using the VA's Montgomery or Post-9/11 GI Bill educational assistance who lives in Oregon while attending Clackamas Community College is entitled to pay tuition and fees at the in-state rate, if the student:

- Enrolls within three years of discharge after serving 90 days or more on active duty; or,
- Enrolls with a transferred benefit within three years of the transferor's discharge after serving 90 days or more on active duty (once enrolled, in-state rates apply while continuously enrolled, including beyond three years); or
- Enrolls with a transferred benefit while the transferor is on active duty, or
- Enrolls under the Marine Gunnery Sergeant John David Fry Scholarship for surviving spouses and children.

## Low-Cost Texts

Low-cost text (LCT) course sections use textbooks and/or other course materials that have a minimal cost. The total cost of textbooks and/or materials<sup>1</sup> in every low-cost course will be \$40 or less. Identify CCC's low-cost courses by looking for the LCT icon in the Class Schedule.

**Disclaimer:** *LCT courses are term- and section-specific, so courses are not designated LCT in the CCC Annual Catalog and Student Handbook. Clackamas Community College makes every effort that the low-cost sections identified in the Class Schedule are accurate at the time of publication. However, review the online Class Schedule or contact the course instructor for the most up-to-date information on textbook and material costs.*

## Textbooks at CCC Library

Your textbooks may be available at CCC Library for short-term in-library use. We call this free service Course Reserves. Instructors are expected to place required and recommended texts on Course Reserves each term, making it easy for you to access your course texts from the first day of class. CCC Library has tables, desks, couches, and free scanners for you to use while reading your textbook! Search CCC Library's website to see if your textbook is on Course Reserves. If it is not available, please let CCC Library know.

## Senior Citizen Tuition Benefit

If you are 62 years of age or older before the start date of the term, you are eligible for a senior citizen tuition benefit. Once your student record reflects this status, tuition will be charged at 1/2 of the resident rate for all CCC-sponsored credit classes (fees excluded). Tuition and fee charges must be paid on or before the second Friday of the term to avoid late payment fees. You are also entitled to free admission to many college special events and athletic activities. For community education senior citizen tuition benefit policies, see individual Community School listings in the [Class Schedule](#).

## Senior Tuition Waiver and Audit Program

If you are 65 years of age or older before the start date of the term, you may be eligible for the Senior Tuition Waiver program. This program is restricted to auditing courses with seats available. Registration for these courses begins the Monday before the start of the term and you can only take a total of eight credits if using this benefit. If you wish to take more than 8 credits you cannot use this program and would instead use the "Senior Citizen Tuition Benefit" that is mentioned above. Criteria for eligibility can be found on the Senior Tuition Waiver and Audit Form available online at [www.clackamas.edu/forms](http://www.clackamas.edu/forms) or from Enrollment and Graduation Services.

*Note: The Senior Citizen Tuition Benefit does not waive any fees associated with courses.*

<sup>1</sup> Included in the cost calculations are: required textbooks and other text-based materials, workbooks, lab manuals, online homework software (e.g., mymathlab), and codes or publisher-provided curricular materials for students. Printing costs are not included, unless a printed version is required for the course. Excluded from the cost calculations are: art supplies, calculators, software, course and student fees or equipment, and optional costs.

# ACADEMIC INFORMATION & REGULATIONS

The following academic information and regulations are intended to help you understand CCC policies and processes. If you have questions, call 503-594-6100.

## Absence/Attendance

- You must be officially registered to attend class.
- Notify your instructor if you can't make it to your first day of class. If you don't, you may lose your seat to a student on the wait list, or be dropped due to the administrative withdraw process.
- If you stop going to class and you don't officially drop the class from your schedule, you will be held academically and financially responsible.
- If the college is open on a religious holiday, you may be excused through prior arrangements with your instructors.
- If you attend a college-sponsored field trip, intercollegiate function or other event, you may be excused through prior arrangement with your instructors.
- Financial aid programs have specific attendance requirements.

Contact the Office of Financial Aid and Scholarships at [finaid@clackamas.edu](mailto:finaid@clackamas.edu) or [www.clackamas.edu](http://www.clackamas.edu) for more information.

## Academic Standing

All non-high school students (anyone with a program code not equal to NA.HIGHSCHOOL) enrolling in four credits or more each term will be required to maintain a minimum term GPA of 2.0 and complete at least 50% of their attempted credits. (Credits attempted do not include credits dropped prior to the second week of the term or credits changed to audit.)

Students will be evaluated for academic standing by the Registrar's Office at the end of each term if one or more of the academic standing criteria have not been met.

- If the first-term students do not meet one or more of the academic standing criteria, they will be placed into an "Academic Alert" status. Students in this status will be encouraged to take advantage of academic support services to assist them with areas of concern.
- If there is a second consecutive term of attendance that students do not meet one or more of the academic standing criteria, they will be placed in an "Academic Warning" status. Students in this status will receive a registration hold and be required to meet with an academic advisor during the Academic Probation term to determine a course of action and the resources needed to support the student's success. Students who do not meet with an academic advisor will be restricted from enrolling in a subsequent term.
- If there is a third consecutive term of attendance that students do not meet one or more of the academic standing criteria, they will be placed in an "Academic Suspension" status. Students in this status will be required to petition to the Director of Student and Academic Support Services for reinstatement to CCC. If your petition is approved, you will be required to meet with an academic advisor and will be restricted from enrolling at CCC until intervention strategies have been accomplished. Student appeals will be considered quarterly by the Director of Student and Academic Support Services, for academic suspension status only.

Students receiving Financial Aid or who are enrolled in programs with additional academic performance requirements (e.g., Nursing, Allied Health, International/PIE) will be subject to higher academic standing criteria.

## Active Military Duty

If you are called for active military duty and wish to withdraw from classes, you will be held harmless with regard to financial and academic responsibility as much as possible.

- You will be asked to officially withdraw from classes through Self Service, fax, mail, or in person.
- Students who have already shipped out or are unable to drop classes should contact Enrollment and Graduation Services directly: 503-594-6074 or [registrar@clackamas.edu](mailto:registrar@clackamas.edu).
- You will be asked to submit a copy of your orders along with a request for a refund/credit to Enrollment and Graduation Services.
- Requests to be held harmless financially and academically for a prior term enrollment must be submitted directly to the Registrar at 503-594-3370 or [registrar@clackamas.edu](mailto:registrar@clackamas.edu).

## Credit by Examination (Challenge Exam)

Clackamas Community College's Credit by Examination (CPL) program can award college credit for knowledge and skills acquired outside the classroom.

You can challenge a course for credit by taking an oral, written, performance examination portfolio or a combination of these for course eligibility. Challenge exams are subject to the following limitations:

- Certain courses have been approved for challenge (visit Student Services for more information).
- You must be enrolled at CCC and complete a minimum of three non-CPL credits during the term in which you challenge a course, or have received a minimum of 12 non-CPL credits from CCC in previous terms.
- Challenge exams need to be completed by the 10th week of the term. Credit from challenge exams completed after the 10th week will be recorded on your transcript the following term.
- The per credit challenge fee must be paid prior to testing.

You may challenge a course by obtaining an application from Enrollment and Graduation Services or Student Services and contacting the college department responsible for instruction of the course. The exam is comprehensive, covering all the basic information and skills required of a student completing the course in the regular manner. For more information, call Student Services at 503-594-3475.

## Hours and Credit Loads

The standard unit of measurement for college work is called a credit.

A full-time student is defined as someone enrolled in 12 or more credits in any one term. No student may enroll in more than 18 credits per term without approval from an advisor.

Courses Numbered	Explanation
100 and above	College level courses resulting in transcribed academic credit, which may be applied toward a degree and/or certificate. May also transfer to four-year colleges.
010 through 099	Courses that result in transcribed academic credit, which may or may not be applied toward a degree and/or certificate. May be transferable to other community colleges. <sup>1</sup>
Any prefix beginning with "X"	Continuing education courses, workshops or seminars that carry no credit or application toward a degree and/or certificate. Not transcribed.
Any prefix beginning with "X"	Classes, seminars, workshops and training resulting in Continuing Education Units (CEUs). These courses are not transcribed as academic credit nor are they applicable toward a degree and/or certificate.

<sup>1</sup> Students should consult with a faculty advisor or an academic advisor to verify course eligibility toward degree/certificate requirements.

## Final Exams

Final examinations take place the last week of each term (see the [Class Schedule](#) for exact dates and times). You must take finals at the scheduled time; exceptions will be made only for illness or other circumstances beyond your control and must be approved by your instructor prior to scheduled exam time.

## Grades and GPA

Letter grades are used to indicate the quality of work completed. To find your grade point average (GPA), divide the total number of grade points earned by the total number of credits attempted in classes graded A-F. Courses graded Pass/No Pass are excluded in calculating GPA. If you believe a grading error has occurred, you must notify your instructor immediately. D grades may not satisfy requisite requirements for certain courses. See [Course Descriptions](#) (p. 232) for specific course requirements.

Grade	Explanation	GPA Points per Credit
A	Excellent	4
B	Good	3
C	Average	2
D	Below average	1
F	Fail	0
I	Incomplete, no credit, no grade points	N/A
N	No pass, no credit, no grade points given	N/A
P	Pass, credit given, no grade points	N/A
UG	Unreported grade, no credit, no grade points	N/A

Grade	Explanation	GPA Points per Credit
W	Withdrawn, no credit given, no grade points awarded	N/A
X	Audit, no credit, no grade points	N/A
Y	Never attended, no credit, no grade points	N/A

## Audit

An audit allows you to attend class without responsibility for a grade. Audit carries no credit, doesn't contribute toward full-time status and does not meet full-time status required for veterans, Social Security, financial aid or athletic eligibility. All other college policies apply including registration, tuition payment, refunds and attendance. If you decide to change your status from audit to credit or credit to audit, notify your instructor prior to the end of the sixth week of the term.

If you are a financial aid student, notify the Office of Financial Aid and Scholarships if you change from a credit to an audit or receive an audit grade. You will be required to pay back funds. Audit classes do not qualify for financial aid.

## Incomplete

A grade of incomplete indicates that a student's work has been satisfactory but an essential amount of work has to be made up. This could include one exam, a paper or other assignment. An incomplete can only be initiated with instructor approval and in consultation with the student. The instructor will determine the timeline within which the student must complete the outstanding work, with a maximum of one calendar year. After that calendar year, if no additional work has been completed, the grade awarded will be the grade at the time the incomplete was initiated.

## Never Attended and Withdraw

If you never attend a course and don't drop it from your schedule, you remain financially responsible for the course and an instructor will assign a grade of "Y." Financial Aid students will be required to pay back any funds for any course and a grade of "Y" is received.

If you start attending a course but don't drop it and stop attending, you remain financially responsible for the course and an instructor may assign a grade of "W."

Grades are at the discretion of your instructor. If you stop attending a course and don't drop it by the stated deadlines, talk with your instructor about the grade you will receive.

## Pass/No Pass

A Pass grade indicates satisfactory completion of the course (equivalent to a C or better). A No Pass grade means the course was not satisfactorily completed and no credit was granted. Some courses are offered only on a Pass/No Pass basis. Some courses offer the option to choose between Pass/No Pass and an A-F grade option and some courses may be taken as A-F letter grades only. You will select your grade option at the time of registration. Changes to grade option must be made with Enrollment and Graduation Services by the end of the sixth week of the term. Please note that this grade option may mean the course is no longer transferable to a four-year institution and may not count toward a degree or certificate.



## Recognition of Excellence

Students will be recognized for achieving a 3.5 GPA in a minimum of 6 credits of A, B, C, or D. There will be two levels of recognition: Honor Roll for a GPA of 3.5-3.749 and President's List for a GPA of 3.75 or greater. These will be noted on students' transcripts at the end of each term.

## Prerequisites/Corequisites

A prerequisite is a course that must be satisfactorily completed before you can enroll in a particular course. A corequisite is a course that must be taken at the same time as another course. See [Course Descriptions \(p. 232\)](#) for detailed information.

## Registration and Transcript Restrictions

A transcript and/or registration restriction (referred to as a "hold") will be placed on your record if you fail to meet an academic standing requirement, equipment return, financial obligation to the college, or due to conduct. You will be notified of the hold through Self Service account and the obligation must be resolved before the hold is removed. See [Registration \(p. 15\)](#) for additional policies related to registration.

## Repeating Courses for Credit

Certain classes may be repeated for credit toward degree completion as specified in the catalog. If a catalog course description does not include information that specifies the course may be repeated, then credits from the course may not be applied toward degree completion. If you have any questions about whether a repeated course will count for credit, contact the Advising Office. Repeating Courses for GPA You may repeat a course as many times as you choose. A repeated course will reflect an "R" on your transcript. Beginning summer term 2013 the best grade (A, B, C, D, F) will be used in computing your cumulative GPA. Other attempts will be shown on your transcript, but will not be included in calculating your GPA. This will happen automatically. Repeated courses completed prior to summer term 2013 will reflect the most recent attempt in the GPA. A Repeated Course Notification form is required.

## Variable Credit

Some courses are eligible for variable credit. These courses are noted in the [Class Schedule](#) with a "V" in the credit column. This option allows you to pursue an individualized learning program. You must register for the number of credits you expect to earn in that term as determined with your instructor. Changes to variable credit must be processed through registration by the end of the 10th week of the term.

## Transcripts

Official transcripts of your coursework at CCC may be ordered online, in person, by written request or fax through Enrollment and Graduation Services. Unofficial transcripts are available in Self Service.

For more information, call 503-594-6074.

*Clackamas Community College reserves the right to withhold issuance of transcripts to students who have not met their obligations to the college.*

# STUDENT RESOURCES & SUPPORT SERVICES

## Academic Advising & Career Coaching

[www.clackamas.edu/advising](http://www.clackamas.edu/advising)

CCC Oregon City Campus, Wacheno Welcome Center  
503-594-3475

CCC Harmony Community Campus, Harmony East  
503-594-0623

CCC Wilsonville Campus  
503-594-0959

Academic and career coaches are available to help students by providing a wide range of academic information and assisting students with many academic processes including course selection, degree requirements, educational and career planning, and transfer information.

Visit the [advising webpage](#) to schedule an appointment.

## Student Accounts Receivable

[www.clackamas.edu/pay](http://www.clackamas.edu/pay)

503-594-6068

Accounts Receivable provides services to both students and departments on student accounts receivable-related issues including, but not limited to, billing charges, third-party billing, tuition, and financial aid refunds, short-term book loans, 1098Ts, collections, and registration/transcript holds. For more information regarding payment and refund of tuition and other charges, see [Paying for Classes](#) (p. 15).

## Associated Student Government

[www.clackamas.edu/asg](http://www.clackamas.edu/asg)

CCC Oregon City Campus, Community Center  
503-594-3040

The Associated Student Government (ASG) of Clackamas Community College is the governing body of CCC students. The president and vice president are elected by the student body; senators and other positions are determined by a selection process. ASG promotes student activities that stimulate social, physical, moral, and intellectual life on campus.

ASG operates helpful services for students such as grant opportunities, Chromebook loans, and the Free Food Pantry. It also coordinates a variety of activities such as awareness events, BBQs, and clubs.

ASG members receive tuition waivers or book stipends for their work and are always accepting applications.

## Athletics

[www.clackamas.edu/athletics/](http://www.clackamas.edu/athletics/)

CCC Oregon City Campus, Randall Hall  
503-594-3043

## Intercollegiate

Clackamas is a member of the Northwest Athletic Association of Community Colleges (NWAACC) and competes in intercollegiate sports with other colleges throughout the Northwest. Intercollegiate athletics

for men include cross country, track, wrestling (NJCAA), basketball, and baseball. Women's intercollegiate sports include basketball, softball, volleyball, track, cross-country, and soccer.

## Bookstore

[clackamas.bncollege.com](http://clackamas.bncollege.com)

CCC Oregon City Campus, McLoughlin Hall  
503-594-6500

The Bookstore is where students may purchase required textbooks (selected titles available to rent), reference books, general books, school and office supplies, art supplies, backpacks, gifts, greeting cards, CCC imprinted gifts and sportswear, candy, snacks, quick meals, cold drinks and much more.

The Bookstore website is the best source for current information. You may purchase textbooks online and have them shipped to you, or reserved for store pick-up.

The Oregon City Campus Bookstore is located at the north end of McLoughlin Hall on the ground floor. For more information contact 503-594-6500 or [sm8278@bncollege.com](mailto:sm8278@bncollege.com). Hours of operation are posted on the front door and on the Bookstore website, [clackamas.bncollege.com](http://clackamas.bncollege.com)

If you are attending classes at the Wilsonville Campus, you can request your books be delivered to the Wilsonville Campus when ordering online.

## Refunds

No refunds or exchanges will be allowed without the original, unaltered cash register sales receipt. Full refunds will be allowed on textbooks purchased for the current term through the first week of fall, winter, and spring terms. Summer term refund periods may vary. Please call or check our website for details.

The following conditions apply to refunds:

- A new textbook that is marked, smudged, or ripped becomes a used text and is not subject to a full refund.
- Wrapped or boxed merchandise must not be unwrapped or opened. Software or access codes are not returnable if opened.
- Non-textbook materials are subject to a 24-hour refund period.
- Bookstore staff reserves the right to determine the salable condition of all returned merchandise.

## End of Term Book Buyback Program

Students may sell their unwanted new and used books for cash at the Bookstore. Receipts are not needed for textbook buyback, but CCC Student ID is required. Specific buyback dates and hours are available on the Bookstore website, [clackamas.bncollege.com](http://clackamas.bncollege.com)

## Career Services

[www.clackamas.edu/careers](http://www.clackamas.edu/careers)

**CCC Oregon City Campus, Wacheno Welcome Center**  
503-594-6001

Career, employment, and training information and services are provided to students and potential students. Information and services include:

- Career exploration resources
- Career assessment tools
- Job search information and planning
- Career and job search classes
- Career coaching
- Many of these resources are available online

## Child Care

[www.clackamas.edu/child-care/](http://www.clackamas.edu/child-care/)

**CCC Oregon City Campus, Family Resource Center**  
503-657-9795

The YMCA Child Development Center is located in the Family Resource Center on the Oregon City campus of Clackamas Community College. The center offers affordable and flexible child care for children ages six weeks to 12 years. Children enrolled in the program will play and learn in the NAEYC accredited, state-licensed child care programs which offer a host of age-appropriate experiences for children under the watchful guidance of well-trained, caring staff members. Space is limited and pre-enrollment is necessary. Contact the center for enrollment materials as soon as you recognize your child care needs. Students at CCC may qualify for child care assistance and should contact the YMCA center to learn more about these options.

## Clackamas County Children's Commission

<https://clackcokids.org/>

503-675-4565

CCCC provides free preschool and daycare services on campus.

## Head Start Preschool

Preschool services through Head Start give children ages three to five years old 3.5 hours per day, four days per week of classroom time in addition to regular home visits September - May. Our state-certified teachers and aides provide an excellent learning experience in a safe and encouraging environment. Two nutritious meals are prepared and served during class time. No summer services offered at this time. Limited space available.

## Early Head Start

Early childhood education services through Early Head Start provide 6.5 hours a day, four days a week for children six weeks to three years old. Parents must be enrolled in job training or school and have no other sources for child care during the day. Quality care and nutritious meals are provided and served during class time. During the summer, the program is home-based with regular educational home visits. Very limited space available.

Children do not need to be potty trained and we provide all the diapers during class time. CCCC also provides home-based support services to pregnant mothers and children 0-3 years of age throughout Clackamas County. Call the CCCC enrollment office today for more information

about registration, participation requirements, and availability. No transportation available through us for this center.

## Clubs

[www.clackamas.edu/clubs](http://www.clackamas.edu/clubs)

**CCC Oregon City Campus, Community Center**  
503-594-3933

Campus clubs are approved and overseen by the Associated Student Government (ASG) and new interest groups are encouraged to organize following ASG procedures. Some of the clubs active on campus include American Sign Language, French Club, Gender & Sexuality Alliance, Horticulture, NW Collegiate Ministries, Phi Theta Kappa, STEM, Student Nurses, Welding, and Writers.

## Counseling Department

[www.clackamas.edu/counseling](http://www.clackamas.edu/counseling)

**CCC Oregon City Campus, Wacheno Welcome Center**  
503-594-3176

Counselors are available to provide support services for students at Clackamas Community College. Counselors use a solution focused model to help students reach their goals and improve quality of life. Some common counseling topics include personal/mental health counseling, career goals, identifying academic performance, building and maintaining healthy relationships, and accessing resources. Counselors may provide community referrals to find the best fit to meet your needs. Counselors also teach courses related to academic strategies and applied life skills designed to improve career, personal and academic achievement.

## Community Gardens

[www.clackamas.edu/gardens](http://www.clackamas.edu/gardens)

**CCC Oregon City Campus**  
503-594-3041

The Community Gardens at Clackamas Community College provide an economical, convenient spot for the public to grow their own vegetables and flowers. Each plot is \$40 per year. For information on the Community Gardens, contact the Environmental Learning Center at 503-594-1656.

## Computer Labs

**CCC Oregon City Campus**  
503-594-6632

The college has computers available for student use. The Academic Computing Lab in the Dye Learning Center and Streeter Hall Open Computing Lab are general access labs open to all students.

Many academic departments manage their own computer labs. Specialized software for these programs is usually available in these labs only. Check with specific departments to see if they provide lab hours for students. See posted hours at [www.clackamas.edu/tutoring](http://www.clackamas.edu/tutoring).

## Streeter Hall Open Computing Lab

503-594-6632

Streeter Hall Open Computing Lab is a general access lab open to all students. The lab offers Windows-based computers, general-purpose software such as Microsoft Office and a printer. See posted hours at [www.clackamas.edu/tutoring](http://www.clackamas.edu/tutoring).

## Academic Computing Lab

See [The Learning Center](#) (p. 25)

## Music Technology and Audio Recording Labs

CCC Oregon City Campus, Niemeyer Center, N216  
503-594-3337

The Music Technology Labs and Audio Recording Studio enable students to compose, record, print, and produce music. The facilities are available to CCC students enrolled in music classes that use related Music Technology hardware and software. The CCC Music Technology Labs house 25 state-of-the-art music computer workstations. Software includes Finale, ProTools, and Reason.

## Disability Resource Center

[www.clackamas.edu/drc](http://www.clackamas.edu/drc)

CCC Oregon City Campus, Wacheno Welcome Center  
503-594-6357  
[drc@clackamas.edu](mailto:drc@clackamas.edu)

The Disability Resource Center (DRC) provides students with disabilities equal access to college activities, courses (both online and in-person) and programs.

Students who have a diagnosis that impacts their ability to learn or take a test, either temporarily or permanently, should contact the DRC.

The first step to seeking services with the Disability Resource Center (DRC) is to submit documentation of disability. This could be a 504 plan, IEP, or letter from a qualified provider. After the DRC receives the documentation a meeting will be scheduled to determine accommodations for classes. Please contact the DRC with questions about the DRC or obtaining documentation.

Have a question? Or unsure what qualifies for accommodations? Contact the DRC, 503-594-6357 or [drc@clackamas.edu](mailto:drc@clackamas.edu).

<https://www.clackamas.edu/campus-life/student-services/disability-resource-center>

## Enrollment and Graduation Services Center

CCC Oregon City Campus, Wacheno Welcome Center  
503-594-6074

CCC Harmony Community Campus, Harmony Building  
503-594-0620

CCC Wilsonville Campus  
503-594-0940

Each Enrollment Services Center provides information and assistance with admissions, registration, transcript requests, student ID cards, and making payments.

## The Office of Financial Aid and Scholarships

[www.clackamas.edu/financial-aid](http://www.clackamas.edu/financial-aid)

CCC Oregon City Campus, Wacheno Welcome Center  
503-594-6082

The Office of Financial Aid and Scholarships provides students with information, resources, applications, and other required forms necessary to apply for various types of aid offered through the federal government, state, and Clackamas Community College (CCC). Here are the steps to applying for financial aid at CCC.

### Step by Step Process

#### Step 1 Apply to CCC

Go to: [www.clackamas.edu/apply](http://www.clackamas.edu/apply)

#### Step 2 Apply for Financial Aid

**U.S. Citizens and permanent residents:** Apply at [www.fafsa.gov](http://www.fafsa.gov) every year as soon after Oct. 1 as possible. This one application provides consideration for federal and state grants, federal student loans, and work-study opportunities. CCC's School Code: 004878.

**Undocumented Oregon residents:** Complete the Oregon Student Aid Application (ORSAA) at [oregonstudentaid.gov](http://oregonstudentaid.gov) to determine eligibility for some state-based financial aid programs. The ORSAA is for undocumented Oregon students, including students who have DACA (Deferred Action for Childhood Arrivals) status.

Note: Do NOT complete the ORSAA if you are a U.S. citizen or a legal permanent resident with an Alien Registration number, as you will already be considered for Oregon-based financial aid through FAFSA.

#### Step 3 Check your email in MyClackamas

Go to: [my.clackamas.edu](http://my.clackamas.edu)

- Indicates the college has received your FAFSA or ORSAA.
- We communicate all instructions for your next steps via email.

#### Step 4 Check your MyClackamas account-weekly

Click on: Self Service Financial Aid Tab

- Complete all documents requested.
- Once documents are submitted, it may take a few weeks to review your file.
- Additional information may be required.
- You will receive an email once your file is reviewed and your award letter is available.
- Accept or reject your award letter online.
- To receive loans, go to [www.studentaid.gov](http://www.studentaid.gov)
- Complete: Entrance Counseling for CCC and a Master Promissory Note (MPN). (Select Subsidized/Unsubsidized.)

### Need Help?

- Get personal assistance in the Financial Aid Resource Lab: Have questions about financial aid? Schedule a free virtual appointment with our Financial Aid Resource Lab staff who can give you one-on-one help with the financial aid process. This service is open to current and future students, as well as community members. If you've got questions about how to pay for college, we've got the answers. Completing the FAFSA application is the first step in securing federal



financial aid, including grants, work-study, and student loans. Make an appointment here: [www.clackamas.edu/financial-aid-resource-lab](http://www.clackamas.edu/financial-aid-resource-lab). Additional questions can be sent to [finaid@clackamas.edu](mailto:finaid@clackamas.edu).

### Visit The Financial Aid Resource Lab

#### CCC Oregon City Campus, Wacheno Welcome Center

In-person drop-in hours: Monday-Thursday: 12 p.m. - 3 p.m.

Virtual drop-in hours: Mon., Wed., Fri., 12 p.m. - 3 p.m.

Appointment by request: [www.clackamas.edu/financial-aid-resource-lab](http://www.clackamas.edu/financial-aid-resource-lab)

**FREE** to students and the general public on a walk-in basis

Staffed by CCC Financial Aid Professionals

## Scholarships

[www.clackamas.edu/Scholarships](http://www.clackamas.edu/Scholarships)

503-594-6082

The CCC Foundation raises funds each year to provide up to \$500,000 in scholarship awards to new and returning students. There is just one simple electronic application to fill out to compete for hundreds of scholarships!

Round 1 Application: Opens Jan. 30th and closes mid-April

Round 2 Application: Opens Aug. 1st and closes mid-October

Apply today, one in three applicants receive an award! Our application and more information is online at [www.clackamas.edu/Scholarships](http://www.clackamas.edu/Scholarships)

You can get questions answered by emailing [scholarships@clackamas.edu](mailto:scholarships@clackamas.edu).

### General Student Scholarships

The CCC Foundation funds more than \$500,000 in scholarships each year for new and returning students. Our application is online at [www.clackamas.edu/scholarships](http://www.clackamas.edu/scholarships). Once you have completed our scholarship application, you are automatically considered for all CCC Foundation scholarships you meet the criteria for. The application is open January 30 through October with two deadlines; April 12 and Nov. 1. We review applications in April for awarding in fall term and in November for winter term awards

### High School Scholarships

The CCC Foundation offers scholarships through each public high school in our district. Information about these scholarships is available in local high school counseling or career centers. Apply online Jan. 30–April 12 at [www.clackamas.edu/Scholarships](http://www.clackamas.edu/Scholarships).

High school students who live in the district and compete in the annual Clackamas Regional Skills contest are eligible for partial one-term tuition waiver which are awarded to the top three winners in all categories of the competition.

### Special Tuition Scholarships

If you have special skills or plan to participate in extracurricular activities like art, athletics, speech, journalism, student government, music or theater, you may be eligible for a tuition waiver. Contact the appropriate college department to find out how to apply.

## Private (Non-CCC) Scholarships

A variety of sources offer scholarships for Community College students of all ages. These scholarships are listed at [clackamas.academicworks.com](http://clackamas.academicworks.com). Click on Opportunities, and choose External.

## Environmental Learning Center

[www.clackamas.edu/elc](http://www.clackamas.edu/elc)

CCC Oregon City Campus

503-594-3015

The John Inskeep Environmental Learning Center is a great place for people of all ages to explore the outdoors and learn about watersheds in a natural environment. Trails, interpretive signs, bird blind, an outdoor amphitheater, and classrooms provide an ideal place for all ages to explore and learn. The ELC also operates the Community Garden on the Oregon City campus.

CCC classes, students and staff, as well as community members, are encouraged to visit during daylight hours- explore the trails, discover wildlife and native plants, or simply enjoy some relaxation!

Program offerings include:

- Field trips and day camps designed to enrich the learning of K-12 students in the area of environmental education
- Workshops for adults
- Continuing Education for professionals covering topics related to the environment and water quality

For additional information: [rharber@clackamas.edu](mailto:rharber@clackamas.edu)

## Fitness Center

CCC Oregon City Campus, Randall Hall

503-594-3043

The CCC Fitness Center is open to students and staff when classes are not scheduled in the center. Equipment includes pyramid weight machines, free weights, exercise bicycles, steppers and rowing machines, treadmills, as well as spinning bikes, ellipticals, an upper body ergometer, and several single station machines.

## Food On Campus

CCC Oregon City Campus, Wacheno Welcome Center

The Cougar Café in the Wacheno Welcome on the Oregon City campus offers a full grill, with options like breakfast burritos, burgers, fries, tater tots, chicken strips, and pizza by the slice. The Cougar Café is open Monday through Friday 8 a.m. to 2 p.m. during fall, winter, and spring terms. Vending machines offering beverages, snacks, and fresh food options like sandwiches, salads, and fruit are located at the Harmony and Wilsonville campuses and most buildings throughout the Oregon City campus.

## Graduation Services

CCC Oregon City Campus, Wacheno Welcome Center  
503-594-6651  
[gradservices@clackamas.edu](mailto:gradservices@clackamas.edu)

Graduation Services can assist you with knowing the total number of credits that can be transferred to CCC from other colleges, identify the number of credits needed to complete your degree, and assist you with your Graduation Application.

## Honor Society

ΦΘΚ: Phi Theta Kappa  
503-594-3040 or 503-594-3041

The Clackamas chapter of Phi Theta Kappa, the international honor society for students in community colleges, offers students recognition for hard work and ways to contribute to the community.

Students who have completed at least 12 college-level credits and have a 3.5 or better cumulative grade point average are invited to join.

Membership has many benefits, including Phi Theta Kappa scholarships, society publications, and travel to regional and international meetings. You also have the opportunity to wear a gold stole and tassel at graduation. Chapter activities are centered around the society's four hallmarks: scholarship, leadership, service, and fellowship. Joining Phi Theta Kappa is a mark of distinction. Applications are available in the Student Activities Office, CC152.

## The Learning Center

[www.clackamas.edu/tutoring](http://www.clackamas.edu/tutoring)  
CCC Oregon City Campus, Dye Learning Center  
503-594-6191  
[tutoring@clackamas.edu](mailto:tutoring@clackamas.edu)

The Learning Center: A welcoming environment, open and accessible to all, that inspires people to engage in lifetime learning. The Learning Center is located in the Dye building on the Oregon City campus and online at [www.clackamas.mywconline.com](http://www.clackamas.mywconline.com) and offers the services listed below.

## Harmony Tutoring Lab

[www.clackamas.edu/tutoring](http://www.clackamas.edu/tutoring)

CCC Harmony Community Campus, Harmony West Third Floor  
503-594-6191  
[tutoring@clackamas.edu](mailto:tutoring@clackamas.edu)

The Harmony Tutoring Lab offers drop-in science and math tutoring and appointment-based writing tutoring. The space is a welcoming environment for students to get academic support and access to computers and a printer. Tutoring hours vary by term, and the tutoring lab is closed during CCC holidays and campus closures. See posted hours on the web, [www.clackamas.edu/tutoring](http://www.clackamas.edu/tutoring).

## Academic Computing Lab

503-594-6632  
[tutoring@clackamas.edu](mailto:tutoring@clackamas.edu)

The Academic Computing Lab in the Dye Learning Center has Windows-based computers available for student use and offers drop-in tutoring for a variety of computing issues,

such as accessing information on Moodle, using all Microsoft Office applications, or printing. Business, accounting, and computer science tutors are available during all open lab hours. You must be a currently registered student to use the lab. See posted hours on web <http://www.clackamas.edu/tutoring>.

## Math Lab

503-594-6191  
[tutoring@clackamas.edu](mailto:tutoring@clackamas.edu)

Drop-in math tutoring is available in the Dye Learning Center on the Oregon City campus and at the Harmony campus on the third floor in the new Harmony West building. In the Math Labs, students can obtain one-on-one help for their math homework and preparation for exams. Help is available for most math classes taught on campus. We also offer one-on-one scheduled tutoring for pre-100-level math courses at the Oregon City campus. For more information about scheduled tutoring or to view our posted hours visit, [www.clackamas.edu/tutoring](http://www.clackamas.edu/tutoring).

## Writing Center

503-594-6191  
[writing@clackamas.edu](mailto:writing@clackamas.edu)

The Writing Center offers students one-to-one feedback on any writing assignment, for any class or project. Students can get help with any aspect of writing: understanding the assignment, strategies for getting started, grammar and editing, organization, strategies for revising and polishing, considering the audience, and citing sources. Help is available for working on scholarship and admissions applications and essays, as well as cover letters and resumes. See posted hours on the web, [www.clackamas.edu/tutoring](http://www.clackamas.edu/tutoring).

## Subject-Area Tutoring

503-594-6191  
[tutoring@clackamas.edu](mailto:tutoring@clackamas.edu)

The Learning Center provides free individual and small group tutoring in many subjects, such as science. Tutors are available by request, with some drop-in tutoring and some by appointment. Limited services are available at Harmony and Wilsonville in some subjects.

### *Additional Tutoring Services and Labs*

- A & P Study Room: DeJardin 132
- Accounting Tutoring: Academic Computing Lab: Dye 128
- Adult Basic Skills SMART Learning Lab: Dye 129
- Chemistry Tutorial Lab: DeJardin 242
- Digital Media Lab: McLoughlin 125
- Horticulture: Library and Computer Lab: Clairmont
- MIDI and Music labs: Niemeyer 216, 211
- Open Computing Lab and Quiet Study Space, Streeter Hall 137
- Volunteer Literacy Center, D132
- World Language Lab: McLoughlin 244

## Online Tutoring Available

503-594-6191  
[tutoring@clackamas.edu](mailto:tutoring@clackamas.edu)

Additional online tutoring options are offered to current Clackamas Community College students as a supplementary tutoring resource for subjects or during hours not currently offered in the Dye Learning Center.

Students can access up to seven hours of free online tutoring per term. More information found at [www.clackamas.edu/Smarthinking](http://www.clackamas.edu/Smarthinking)

## Library

[www.clackamas.edu/library](http://www.clackamas.edu/library)

**Circulation: 503-594-6323**

[circ@clackamas.edu](mailto:circ@clackamas.edu)

**Research Help: 503-594-6042**

[reference@clackamas.edu](mailto:reference@clackamas.edu)

CCC Library offers hundreds of thousands of print books, eBooks, graphic novels, electronic journals and magazines, print newspapers, streaming videos, and DVDs – online from anywhere and in the library, located in the Dye Learning Center on the Oregon City campus. Search for and request library material from 38 Orbis Cascade Alliance partner libraries. Access our electronic resources from off-campus by visiting our website, and logging in using your CCC username and password. Get help 24/7 from a librarian using the chat service available on our website, by email, phone, 1:1 Zoom appointment, or by stopping by the library during open hours. Librarians teach and assist students with all research-related tasks, including using the library, developing research topics, and finding, evaluating, and citing sources. Librarians also provide course-integrated instruction and formal library instruction via LIB101, a free 1-credit course. Other services include Summit; interlibrary loan; Course Reserves; holds; printing, copying, and scanning; and calculator, headphone, cell phone charger, and laptop charger rentals. CCC Library is available for use by students, faculty, staff, and the general public. Make an appointment with a CCC Librarian, [calendly.com/clackamaslibrary](https://calendly.com/clackamaslibrary). See posted hours on the web, [libguides.clackamas.edu](http://libguides.clackamas.edu).

## Music

[www.clackamas.edu/music](http://www.clackamas.edu/music)

**CCC Oregon City Campus, Niemeyer Center**

**503-594-3337**

The Music Department sponsors a number of vocal and instrumental performing groups that are open to students and to the community. Groups include Wind Ensemble, Jazz Ensemble, Chamber Choir, Vocal Jazz Ensemble, String Ensemble, Jazz Combo/Improvisation, Contemporary Music Ensemble and Pep Band (pop/blues/rock/R&B). Some ensembles require auditions. Scholarship funds and work-study positions may be available for students who participate in music groups or activities (need not be a music major).

The Music Department offers group instruction on guitar, voice, and piano. In addition, individual (private) lessons are available for almost all instruments. Music Technology Labs and Audio Recording Studios enable students to compose, record, print, and produce music. Software includes Finale, ProTools, and Reason. The Labs are available to CCC students enrolled in appropriate music classes.

The CCC Music Department is home to the Ed Beach Collection, a library of more than 2,200 hours of recorded jazz. The original master tapes are now in the National Archives; this edition of the collection is the only other edition in existence.

## Peer Program

[www.clackamas.edu/peer-program](http://www.clackamas.edu/peer-program)

**CCC Oregon City Campus, Community Center**

**503-594-3444**

Peer Assistants serve in office support positions in several college departments, including Student Life and Leadership, the Disability Resource Center, and Advising. These students are part of the overall student leadership program that includes ASG. These students also receive tuition waivers in exchange for their leadership.

## Service Learning Volunteers

**CCC Oregon City Campus, Community Center**

**503-594-3030**

The Service Learning program provides volunteer/community service opportunities for CCC students. Service Learning takes place in the form of community service events, individual service for a particular agency, and a for-credit service-learning course. In this latter case, college credit can be earned for participation in the program and tuition is free. Email us at [john.ginsburg@clackamas.edu](mailto:john.ginsburg@clackamas.edu).

## Student ID Cards

Photo student ID cards are available at each of our campuses. You'll need this card for transactions on campus, including library checkout, access to computer and tutorial labs, the Assessment Center, enrollment verification, and admission to college events. Picture identification will be required to obtain your photo ID card. First card is free, replacements are \$10.

## Student Life & Leadership

[www.clackamas.edu/campus-life/student-involvement](http://www.clackamas.edu/campus-life/student-involvement)

**CCC Oregon City Campus, Wacheno Welcome Center**

**503-594-3040**

The Student Life and Leadership Office is the department that coordinates and oversees the following:

- Associated Student Government (ASG)
- Clubs
- Free Food Pantry
- Health and Wellness Events
- International Student Support
- Multicultural Center
- Peer Assistants
- Service Learning
- Transportation
- Welcome Weeks and other special events

The office is also the location for calculator and locker rentals, lost-and-found, local housing options, and lots of other information.

## Student Publications

[theclackamasprint.net](http://theclackamasprint.net)

[www.clackamas.edu/journalism](http://www.clackamas.edu/journalism)

CCC Oregon City Campus, Roger Rook Hall, RR135  
503-594-3261 or 503-594-3254

The Clackamas Print is an award-winning student-run newspaper published weekly during the school year. Clackamas News Online trains students in broadcast journalism. Clackamas Literary Review is a nationally distributed literary magazine designed and edited by students that publish poetry, fiction, and essays, and offers a student writing contest. Together, these student-run media provide the opportunity to gain practical experience in writing, broadcast journalism, publishing, photography, multimedia reporting, illustration, layout, desktop publishing, and graphic design. Tuition waivers are available to student editors.

For information, contact Rita Shaw at [ritas@clackamas.edu](mailto:ritas@clackamas.edu) or 503-594-3254.

## Testing & Placement Services

[www.clackamas.edu/testing](http://www.clackamas.edu/testing)

CCC Oregon City Campus, Wacheno Welcome Center  
503-594-3283

[testing@clackamas.edu](mailto:testing@clackamas.edu)

Testing & Placement Services offers the following:

- PASS (Placement Advising for Student Success)
- Accuplacer Placement Testing
- CCC & non-CCC proctored testing (by arrangement)
- Workkeys (National Career Readiness Certificate)
- Oregon Department of Agriculture Exams
- Pearson Vue Testing (including GED testing)
- Kryterion Testing

CCC Harmony Campus, East Building, H180  
503-594-0636

[testing.harmony@clackamas.edu](mailto:testing.harmony@clackamas.edu)

- PASS (Placement Advising for Student Success)
- Accuplacer Placement Testing
- CCC & non-CCC proctored testing (by arrangement)
- Workkeys (National Career Readiness Certificate)

CCC Wilsonville Campus, East Wing, W151  
503-594-0940

[testing.wilsonville@clackamas.edu](mailto:testing.wilsonville@clackamas.edu)

- Accuplacer Placement Testing and advising
- CCC & non-CCC proctored testing (by arrangement)
- Workkeys (National Career Readiness Certificate)
- Oregon Department of Agriculture Exams
- Pearson Vue Testing (including GED)

## Theatre

[www.clackamas.edu/theatre](http://www.clackamas.edu/theatre)

CCC Oregon City Campus, Niemeyer Center  
503-594-3153

The Theatre Department produces one full-length play and several student-directed theatre projects each term. Workshop courses focus on the production of theatre for public performance, and everyone in the community is welcome to participate. The department also offers lecture courses, which encompass technique, theory, and philosophy of theatre arts. College credit is available for each production, and students in need of financial assistance may qualify for tuition waivers or work-study.

## Clackamas Repertory Theatre

[www.clackamasrep.org](http://www.clackamasrep.org)

CCC Oregon City Campus, Niemeyer Center  
503-594-6047

Founded in 2005 as an extension of the CCC Theatre Department, Clackamas Repertory Theatre is a professional theatre company that produces a three-play season July through October. CRT features current and former CCC Theatre Department students both on stage and behind the scenes, as well as professional Portland-area actors and directors. For information on our current season, visit [www.clackamasrep.org](http://www.clackamasrep.org)

## Tutorial Services

See [The Learning Center](#) (p. 25)

## Transportation Options for Students

[www.clackamas.edu/transportation](http://www.clackamas.edu/transportation)

Clackamas Community College provides a variety of transportation options including a free shuttle, carpooling matching service, multiple bus options, and a free Bike Rental Program.

The latest information and additional details can be found at [www.clackamas.edu/transportation](http://www.clackamas.edu/transportation).

## CCC XPRESS Shuttle

Free shuttle runs between the Oregon City and Harmony campuses and the Clackamas Town Center Transit Center. Clackamas County provides free shuttles in Oregon City and from the Clackamas Town Center Transit Center to the Clackamas Industrial Area.

## Carpool Matching Service

Find a carpool partner at [GetThereOregon.org](http://GetThereOregon.org). Sign up using your [@student.clackamas.edu](mailto:@student.clackamas.edu) email address. Use [GetThereOregon.org](http://GetThereOregon.org) to find carpool for the chance to win gift cards

## Public Transportation

Clackamas Community College is serviced by a number of bus lines. Plan your trip on Google Maps.

## Bike Rental Program

Rent a bike for free. Rentals include a helmet, lock, front and rear lights, fenders, rear rack, and discount on repairs.



## Veterans Education and Training Center

[www.clackamas.edu/veterans](http://www.clackamas.edu/veterans)

CCC Oregon City Campus, Wacheno Welcome Center

503-594-3438

[vetinfo@clackamas.edu](mailto:vetinfo@clackamas.edu)

Clackamas Community College welcomes veterans, service members, and their family members. We are dedicated to providing exceptional, individualized service and resources to every veteran and military family member. We offer assistance and information about veterans' benefits, education and career options, referrals to community and college services, and enrollment. For over ten years, CCC has been among the top-rated colleges for veterans and military family members. Most recently, CCC was rated the top two-year college in the Pacific Northwest by the Military Times: Best for Vets annual survey. Our purpose is to ensure student success by creating a community of student veterans committed to making the transition from military service to academic and civilian success.

## Veterans Services

[www.clackamas.edu/veterans](http://www.clackamas.edu/veterans)

CCC Oregon City Campus, Wacheno Welcome Center

503-594-3438

[vetinfo@clackamas.edu](mailto:vetinfo@clackamas.edu)

Clackamas Community College provides a comprehensive range of services and assistance for service members, veterans, and their family members, including:

- Assistance with all VA educational and college processes and resources
- Information about VA benefits and other forms of assistance
- Access to a full-service computer lounge with free coffee and snack bar
- Assistance with all forms of military tuition assistance
- Cougar Vets, the student club for veterans and friends of veterans

If you are currently serving in the military, have ever served, or are a military family member, contact us to learn more. Our team at the Veterans Education and Training (VET) Center is committed to making your transition from military service to civilian life a success!

## Work Study

[www.clackamas.edu/work-study](http://www.clackamas.edu/work-study)

503-594-6082

The Work Study program is a federal financial aid program providing student employment. The program is based on financial need and available to eligible students who apply early and are enrolled in at least six credits of coursework in a degree or certificate program. Applicants should use the Free Application for Federal Student Aid (FAFSA) to apply for financial aid, then contact [workstudy@clackamas.edu](mailto:workstudy@clackamas.edu).

## Workforce Development Services

[www.clackamas.edu/workforce](http://www.clackamas.edu/workforce)

CCC Oregon City Campus, Pauling B

503-594-6246

*A successful career starts here!*

CCC's Workforce Development Services supports employment in the community by providing education and training resources and connecting with business partnerships. We provide opportunities to individuals and employers while promoting equity, inclusiveness and respect.

Our Workforce advisors connect people, especially unemployed and underemployed workers, to career development and support services with on-the-job training in growing, high-demand fields like manufacturing, health care and technology. One of our areas of expertise is helping laid-off workers and businesses in need of connecting with a skilled pool of talent to remain competitive.

As part of the WorkSource Oregon network of experts across the state, our goal is to develop a highly skilled workforce that creates economic prosperity in Clackamas County.

Contact a workforce advisor today! Call 503-594-6246 or email at [work.force@clackamas.edu](mailto:work.force@clackamas.edu).

Funded by Clackamas Workforce Partnership

[www.clackamasworkforce.org](http://www.clackamasworkforce.org) through the U.S. Department of Labor and the State of Oregon.

## Student Rights

### Campus Security Report – Jeanne Clery Act<sup>1</sup>

The "Jeanne Clery Disclosure for Campus Security Policy and Campus Crime Statistics Act" (formerly the Campus Security Act) is a federal law that requires institutions of higher education to disclose campus security information, including crime statistics for the campus and surrounding area. As a current or prospective CCC student or employee, you have a right to obtain a copy of this information. You may review this information by accessing the federal government website (enter "Clackamas Community College" in the search field) or in the CCC student handbook. You may also obtain a hard copy of this information upon request by contacting the CCC Campus Safety at 503-594-6650 or at [www.clackamas.edu/student-rights](http://www.clackamas.edu/student-rights)

### Directory Information

Clackamas Community College has established an institutional policy regarding the release of limited directory information as defined in the Family Educational Rights and Privacy Act (FERPA). The following information may be released upon request to anyone:

1. Full name
2. Enrollment status
3. Enrollment dates
4. Verification of certificate, degree, or honors and awards
5. Residency status
6. Major/program
7. Athletic participation (Including height and weight of team members.)

The following information may be released by the Dean of Academic Foundations and Connections or Registrar:

1. Address and telephone number
2. Class location to Public Safety in case of health or safety emergencies.

Exceptions to the above may include but are not limited to:

1. Release of alumni names and addresses to our Foundation Office for communication with CCC graduates;
2. The release and posting of names of students receiving academic honors/awards;
3. Student-athletes may sign a release of information form through the Athletic Department for the release of information regarding registration activity, grades, and access to records by their coach or the athletic director. Other student groups may also sign similar releases through their department/group.

Students employed with the college that have access to student records receive FERPA training and are asked to read and sign an institutional confidentiality statement of understanding. Directory information for use within the college is permitted in accordance with FERPA guidelines. Disclosure within the college does not constitute institutional authorization to transmit, share or disclose any or all information received to a third party.

## Family Educational Rights & Privacy Act (FERPA)

The Family Educational Rights and Privacy Act (FERPA) provides students with specific rights regarding their academic records. They are as follows:

- The right to inspect and review your records. You may request to review your records by submitting a written request to the Registration and Records Office or other school official having custody of such records.
- The right to seek amendment to your record if you believe it to be inaccurate, misleading or in violation of your privacy rights. Requests for amendments must be in writing and must describe the specific item or record you wish to have amended. You must also include the reasons why the amendment is justified.
- The right to consent to disclosure of personally identifiable information contained in your academic records, except when consent is not required by FERPA. FERPA does not require a student's consent when disclosure is to school officials with legitimate educational interests (See AR 6-96-0031). Additionally, consent is not required by FERPA in the instances where a person or company with whom the college has contracted or appointed as its agent and/or students serving on official committees have legitimate educational interest. A school official has a legitimate educational interest if the official needs to review an academic record in order to fulfill their professional responsibilities.
- The right to file a complaint with the Department of Education, Family Compliance Office concerning alleged failures by the college to comply with the FERPA requirements.
- FERPA allows the college to disclose your directory information without consent. If you do not want this information released, you must submit a request with the Enrollment and Graduation Services Office.

## Release of Information

Clackamas Community College adheres to and is committed to honoring all state and federal laws pertaining to the privacy and confidentiality of your directory information and academic record. You have the right

to restrict access to information if you so choose. Please refer to the following in regards to the release and restriction of directory information.

## Requesting to Restrict the Release of Directory Information

You may restrict the release of directory information as mentioned above by submitting a Restrict Directory Information request form to the Enrollment and Graduation Services Office. This restriction will remain in place until you ask for removal. It will remain in place even after you graduate or have stopped attending.

## Use of Your Social Security Number

OAR 581-41-460 authorizes Clackamas Community College to ask you to provide your Social Security Number. The number will be used for reporting, research, and record keeping. Your number will also be provided by the college to the Oregon Community College Unified Reporting System (OCCURS), which is a group made up of all community colleges in Oregon, the State Department of Community Colleges and Workforce Development and the Oregon Community College Association. OCCURS gathers information about students and programs to meet state and federal reporting requirements. It also helps colleges plan, research and develop programs. This information helps the colleges to support the progress of students and their success in the workplace and other education programs. OCCURS or the college may provide your Social Security Number to the following agencies or match it with records from the following systems:

- State and private universities, colleges and vocational schools, to find out how many community college students go on with their education and to find out whether community college courses are a good basis for further education.
- The Shared Information System, which gathers information to help state and local agencies plan education and training services to help Oregon citizens get the best jobs available.
- The Office of Professional Technical Education Management Information System, to provide reports to the state and federal governments. The information is used to learn about education, training and job market trends for planning, research and program improvement. Funding for community colleges is based on this information.
- The Oregon Employment Department, which gathers information, including employment and earnings, to help state and local agencies plan education and training services to help Oregon citizens get the best jobs available.
- The Oregon Department of Education, to provide reports to local, state, and federal governments. The information is used to learn about education, training, and job market trends for planning, research and program improvement.
- The Oregon Department of Revenue and collection agencies only for purposes of processing debts and only if credit is extended to you by the college.
- The National Student Loan Clearinghouse for the purpose of verifying your enrollment at other colleges, universities and vocational schools.
- The Internal Revenue Service, to provide required information related to the Taxpayer Relief Act of 1997.

State and federal law protects the privacy of your records. Your number will be used only for the purposes listed above.

## Solomon Amendment Disclosure

The Solomon Amendment requires by law that the college release: student name, address, telephone number, date of birth, educational level, academic major and degrees awarded upon request from recruiters of the branches of the U.S. military.

## Student Information

The college collects data on all students<sup>1</sup>. The kind and amount of data differ for each student depending on the kind of services you use and the length of your stay at the college. Pursuant to Public Law 93-380, you may review all official records, files, or data pertaining to you, with the following exceptions:

- Confidential financial information reported by the parent or guardian unless the records explicitly grant by written permission the student to review the financial statement.
- Medical, psychiatric, or similar records used for treatment purposes.

Access to your student record is guaranteed and must be made available to you within 45 days of your official request. You may challenge the content of a record you consider inaccurate, misleading, or otherwise in violation of your privacy or other rights by contacting the college Registrar. You have the right to a hearing as outlined in the “Students’ Rights, Freedoms & Responsibilities” section of the Student Handbook.

<sup>1</sup> All data from records submitted, filed, and accumulated in Enrollment and Graduation Services become the property of the College

## Student Right to Know and Other Notification Requirements

Clackamas Community College information regarding academic programs, student completion/graduation rates, financial assistance, athletics, institutional financial support, privacy rights (FERPA), campus security, crime statistics, and other Student Right to Know items may be obtained by going to [www.clackamas.edu/student-rights](http://www.clackamas.edu/student-rights)

Printed copies of this information may also be obtained by contacting the Registration and Records Office at 503-594-3370 or [registrar@clackamas.edu](mailto:registrar@clackamas.edu)

## Discrimination Concerns

Clackamas Community College does not discriminate on the basis of race, color, religion, gender, sexual orientation, marital status, age, national origin, disability, family relationship, or any other protected status in accordance with applicable law. The college’s commitment to nondiscrimination applies to curricular activity and all aspects of the college. In accordance with applicable law, Clackamas Community College does not discriminate on the basis of a disability and is specifically dedicated to providing a harassment-free environment for all people with disabilities, as well as timely and effective provision of services for students with disabilities. To this end, the following procedures are designed to serve any member of the community who experiences any form of discrimination.

## ADA Complaint Procedure

Any student who feels that they have been discriminated against or harassed due to their disability should contact the Disabilities Coordinator to report the event. The Disabilities Coordinator will then investigate the incident consistent with the ADA complaint process. Any student who feels they have been discriminated against due to disability is free at any time to submit a complaint to the office for Civil

Rights. Please refer to board policy for ADA Grievance Procedure and Discrimination form:

[ADA Grievance Procedure](#)

[Discrimination Reporting Form](#)

## Sexual Harassment, Assault, and Title IX

**Title IX Coordinator, Melissa Richardson**

Oregon City Campus, 503-594-3300

[melissa.richardson@clackamas.edu](mailto:melissa.richardson@clackamas.edu)

**Title IX Coordinator, Vicki Hedges**

Oregon City Campus, 503-594-3087

[vickidu@clackamas.edu](mailto:vickidu@clackamas.edu)

**Title IX Coordinator for Students, John Ginsburg**

Oregon City Campus, 503-594-3030

[john.ginsburg@clackamas.edu](mailto:john.ginsburg@clackamas.edu)

[TitleIX@clackamas.edu](mailto:TitleIX@clackamas.edu)

[www.clackamas.edu/titleix](http://www.clackamas.edu/titleix)

Title IX is a federal law that obligates the college to prevent and respond to incidents of sexual harassment, including sexual assault, domestic violence, and stalking. The College is required to investigate all incidents of sexual misconduct and, other than those who are expressly exempt from reporting, faculty and staff (called “responsible employees”) are required to report such incidents when they receive information about sexual misconduct. Resources are available to those who have been sexually harassed or assaulted, including speaking with a confidential advocate (who does not have a duty to report). If you or someone you know has been harassed or assaulted, consult the Title IX website for more information and options, or contact a Title IX Coordinator.

## Resources and Information

Clackamas Community College is a diverse community that provides equal opportunity in employment, activities, and its programs. It is the policy of the Clackamas Community College and its Board that there will be no discrimination or harassment in any education programs, activities, or employment on the grounds of race, color, religion, ethnicity, use of native language, national origin, sex, sexual orientation, marital status, disability, veteran status, age, genetic information or any other status protected under applicable federal, state or local laws. The College also prohibits retaliation against an individual for engaging in activity protected under this policy and interfering with rights or privileges granted under anti-discrimination laws. Persons having questions about equal opportunity and nondiscrimination should contact the dean of Human Resources for Clackamas Community College in Barlow Hall at the Oregon City campus, 503-594-3300.

Please note the following areas of responsibility, should you need relevant resources or information:

**Title II Coordinator, Stephanie Murphy, Director of Adult Education**

Oregon City campus, 503-594-3392

**Problem Resolution Form**

[Problem Resolution Form](#)

This form is to help students who want to report a problem regarding a faculty or staff member of the College. Students should submit this form to the Director (in the case of a staff member) or the Department Chair (in the case of a faculty member) of the department of the faculty/staff

member of concern. Students unsure of where to direct this form should contact Jennifer Anderson, Associate Dean for Enrollment and Student Services, [jennifer.anderson@clackamas.edu](mailto:jennifer.anderson@clackamas.edu).

Please reference the college rule, policy or procedure allegedly violated as described in Student Rights, Freedom & Responsibilities [www.clackamas.edu/students-rights](http://www.clackamas.edu/students-rights)



# EDUCATIONAL FOCUS AREAS

Clackamas Community College opens doors to more than 90 degree and certificate programs and transfer pathways to countless university degrees. If you already have an idea of what you would like to study, you can browse the complete list of academic programs and departments.

If you have not yet decided on a specific program of study, you can start with an educational focus area that matches your interests. Get started on the path to your goals now – even if you are still figuring out where you are headed. As a student at CCC, you will get career guidance, foundational coursework and assigned professional advisors to help you explore your career and transfer options. See where a Clackamas Community College education can take you!

For more information on all eight Educational Focus Areas please visit the [Find Your Focus](#) webpage.

## Business



Create the foundation for a successful management career or become an entrepreneur by studying business at Clackamas Community College. CCC's business programs prepare you to effectively manage money, projects and people.

Get the best possible start toward your goals at CCC, with small class sizes and experienced faculty ready to connect you to your next career and learning opportunities. The Business educational focus area at CCC opens doors to jobs in fields like human resources, project management and accounting. The skills you learn here will prepare you to work for companies in almost any industry - or even to start your own business. Get started today!

For more information please visit the [Business EFA](#) page.

## Programs

- [Accounting AAS](#) (p. 129)
- [Accounting Clerk CC](#) (p. 179)
- [Administrative Assistant CC](#) (p. 179)
- [Administrative Assistant Training CC](#) (p. 180)
- [Administrative Professional AAS](#) (p. 130)
- [Business AAS](#) (p. 134)
- [Business AST](#) (p. 75)
- [Business ASOT](#) (p. 56)
- [Business Management CC](#) (p. 196)
- [First-Line Supervisor Fundamentals CC](#) (p. 191)
- [Human Resource Management CC](#) (p. 196)
- [Human Resource Management Essentials CC](#) (p. 220)
- [Integrated Marketing & Promotion CC](#) (p. 220)
- [Management Fundamentals CC](#) (p. 222)
- [Marketing CC](#) (p. 202)
- [Project Management AAS](#) (p. 170)
- [Project Management CC](#) (p. 210)
- [Project Management Tools & Techniques CC](#) (p. 225)
- [Retail Management CC](#) (p. 211)
- Common Business Transfer Majors:
  - Business
  - Accounting

## Beginning Courses

Contact a Business Advisor before registering for courses:

- Laura Funnemark, [laura.funnemark@clackamas.edu](mailto:laura.funnemark@clackamas.edu)
- PJ Martineau, [pj@clackamas.edu](mailto:pj@clackamas.edu)

Code	Title	Credits
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-131	Introduction to Business Computing	4
FYE-101	First Year Experience Level I	2
WR-121Z	Composition I	4

## Creative Arts, Communication and Humanities



Whether your creative interests involve designing, communicating, performing, or producing, you'll find a home in Clackamas Community College's creative arts, communication and humanities programs. We offer courses to explore your creativity, express your artistic voice and vision, and put your talents center-stage.

For more information please visit the [Creative Arts, Communication and Humanities EFA](#) page.

### Programs

- [Digital Media Communications AAS \(p. 141\)](#)
- [English, AS, PSU \(p. 111\)](#)
- [English Literature AAT \(p. 67\)](#)
- [Entry Level Journalist CC \(p. 218\)](#)
- [Music Performance & Technology AAS \(p. 165\)](#)
- [Music Technology CC \(p. 207\)](#)
- [Music, AS, PSU \(p. 124\)](#)
- [Video Production Technician CC \(p. 227\)](#)
- Common Creative Arts, Communication and Humanities Transfer Majors:
  - English
  - Fine and Studio Arts

### Beginning Courses

Contact a Creative Arts, Communication and Humanities Advisor before registering for courses:

- Kirby Gleason, [kirby.gleason@clackamas.edu](mailto:kirby.gleason@clackamas.edu)

Code	Title	Credits
ART-115	Basic Design: 2-Dimensional Design	4
EFA-101C	Introduction to the Creative Arts Communication and Humanities	2
FYE-101	First Year Experience Level I	2
MUS-105	Music Appreciation	3
PHL-102	Ethics	4
TA-101	Appreciation of Theatre	4
WR-121Z	Composition I	4
A World Language Course (ASL, FR, GER, SPN)		4

## Health Professions



Take your place in the vital, growing field of health care. A Clackamas Community College education can take you to the front lines of the health system as a first responder, equip you to provide patient care as a nurse or medical assistant, or prepare you for essential behind-the-scenes health careers like medical billing and coding.

In two years or less, you could be starting your career and meeting urgent health care needs in the community. A CCC education in the health professions gives you the best possible preparation for the real world. The learning environment mirrors clinical settings and puts the latest medical technology at your fingertips. Get your start in health care today at CCC!

For more information please visit the [Health Professions EFA](#) page.

### Programs

- [Dental Assistant CC \(p. 186\)](#)
- [Emergency Medical Technician CC](#)
- [Emergency Medical Technology CC \(p. 190\)](#)
- [Fitness Technology CC \(p. 192\)](#)
- [Healthcare Careers CC \(p. 195\)](#)

- [Medical Assistant CC \(p. 204\)](#)
- [Medical Billing and Coding CC \(p. 205\)](#)
- [Nursing \(RN\) AAS \(p. 167\)](#)
- [Phlebotomy CC](#)
- Common Health Professions Transfer Majors:
  - Allied Health Diagnostics
  - Intervention and Treatment
  - Health and Physical Education
  - Public Health

## Beginning Courses

Contact a Health Professions Advisor before registering for courses:

- Phil Reid, [philr@clackamas.edu](mailto:philr@clackamas.edu)
- Tracy Rumsey, [tracy.pantanorumsey@clackamas.edu](mailto:tracy.pantanorumsey@clackamas.edu)

Code	Title	Credits
BI-120	Introduction to Human Anatomy and Physiology	4
FYE-101	First Year Experience Level I	2
HE-202	Introduction to Fitness Technology Careers	1-2
or MA-100	Introduction to Medical Assisting	
MA-110	Medical Terminology	4
WR-121Z	Composition I	4

All courses must be passed with a C or better

## Industrial Technology and Automotive



Step out of the traditional classroom and into a hands-on workspace with advanced machinery that's designed to simulate real-world work settings. Learn all the skills you need to make a big impact in a career that's engaging and continually evolving.

CCC's Industrial Technology and Automotive programs have some of the best facilities in the Pacific Northwest. These programs house state-of-the-market machinery, robotics, tools and more. The spaces are large, full of natural light and classes are led by faculty with decades of experience - making it a one-of-a-kind learning environment. You'll also get the chance to work closely with your peers on in-depth projects.

Take your place in the workforce or advance your skills in your current job with programs you can complete in as little as one year.

For more information please visit the [Industrial Technology and Automotive EFA](#) page.

## Programs

- [Auto Body/Collision Repair and Refinishing Technology AAS \(p. 131\)](#)
- [Auto Body/Collision Repair and Refinishing Technology CC \(p. 216\)](#)
- [Auto Collision Refinish CC](#)
- [Auto Collision Repair CC](#)
- [Automotive Service Technology AAS \(p. 132\)](#)
- [CNC Operator CC \(p. 217\)](#)
- [Computer-Aided Drafting \(CAD\) CC \(p. 183\)](#)
- [Computer-Aided Manufacturing AAS \(p. 136\)](#)
- [Electronics Engineering Technology AAS \(p. 149\)](#)
- [Electronics Engineering Technology CC \(p. 189\)](#)
- [Energy Systems Maintenance Technician CC \(p. 217\)](#)
- [Entry Level Welder CC \(p. 219\)](#)
- [Industrial Maintenance Technology AAS \(p. 157\)](#)
- [Industrial Maintenance Technology CC \(p. 198\)](#)
- [Industrial Maintenance Technology Mechanical Maintenance CC \(p. 199\)](#)
- [Initial Welding CC](#)
- [Machine Tool Technology AAS \(p. 162\)](#)
- [Machine Tool Technology CC \(p. 202\)](#)
- [Mastercam CC \(p. 203\)](#)
- [Mechatronics CC \(p. 203\)](#)
- [Microelectronics Systems Technology AAS \(p. 164\)](#)
- [Microelectronics Systems Technology CC \(p. 206\)](#)
- [Renewable Energy Technology AAS \(p. 171\)](#)
- [Renewable Energy Technology CC \(p. 210\)](#)
- [Under Car Technician - Automatic Transmission CC \(p. 226\)](#)
- [Under Car Technician - Manual Transmission CC \(p. 226\)](#)
- [Welding Technology AAS \(p. 174\)](#)
- [Welding Technology CC \(p. 213\)](#)
- Common Industrial Technology and Automotive Transfer Majors:
  - Industrial Technology

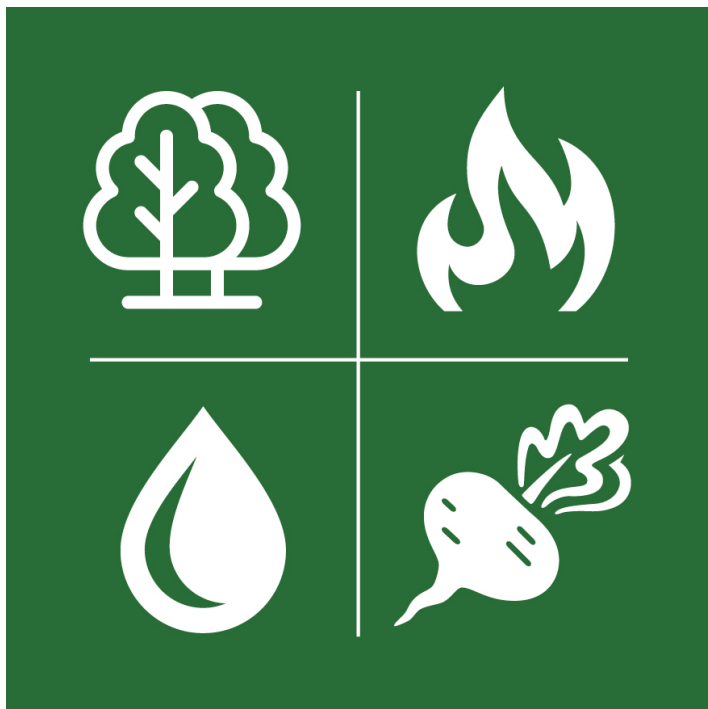
## Beginning Courses

Contact an Industrial Technology and Automotive Advisor before registering for courses:

- Jodi Stapleton, [jodis@clackamas.edu](mailto:jodis@clackamas.edu) ([jodis@clackamas.edu](mailto:jodis@clackamas.edu))

Code	Title	Credits
FYE-101	First Year Experience Level I	2
MFG-102	Makerspace: An Introduction to Digital Manufacturing	1-3
MFG-107	Industrial Safety & First Aid	3
MFG-130	Basic Electricity I	3
MTH-050 or WR-101	Technical Mathematics I Workplace Writing	4

## Natural Resources



If you enjoy working with your hands, collecting data and analyzing results -or want to ensure a healthy environment for everyone - a natural resources program may be what you're looking for.

Step out of the classroom and into the great outdoors. Whether it's using drones to plot land maps, fighting fires, growing plants, creating beautiful landscapes, or ensuring the community has clean water, our natural resources programs are hands on and designed to give you real-world experience in the field.

For more information please visit the **Natural Resources EFA** page.

## Programs

- [Emergency Management Professional AAS \(p. 151\)](#)
- [Geographic Information Systems \(GIS\) Technology CC \(p. 193\)](#)
- [High Purity Water CC \(p. 195\)](#)
- [Horticulture AAS \(p. 152\)](#)
- [Horticulture, AS, OSU \(p. 117\)](#)
- [Horticulture CC \(p. 195\)](#)
- [Irrigation Technician CC \(p. 221\)](#)
- [Landscape Management AAS \(p. 159\)](#)
- [Landscape Management AAS, Arboriculture Option \(p. 161\)](#)
- [Landscape Practices CC \(p. 201\)](#)

- [Organic Farming CC \(p. 209\)](#)
- [Plant Health Management CC \(p. 224\)](#)
- [Water and Environmental Technology AAS \(p. 172\)](#)
- [Water and Environmental Technology CC \(p. 212\)](#)
- [Wilderness Survival & Leadership CC \(p. 228\)](#)
- [Wildland Fire Forestry CC \(p. 228\)](#)
- [Wildland Fire Management AAS \(p. 177\)](#)
- [Wildland Fire Science CC \(p. 214\)](#)
- [Wildland Firefighter 1 CC \(p. 228\)](#)
- Common Natural Resources Transfer Majors
  - Horticulture

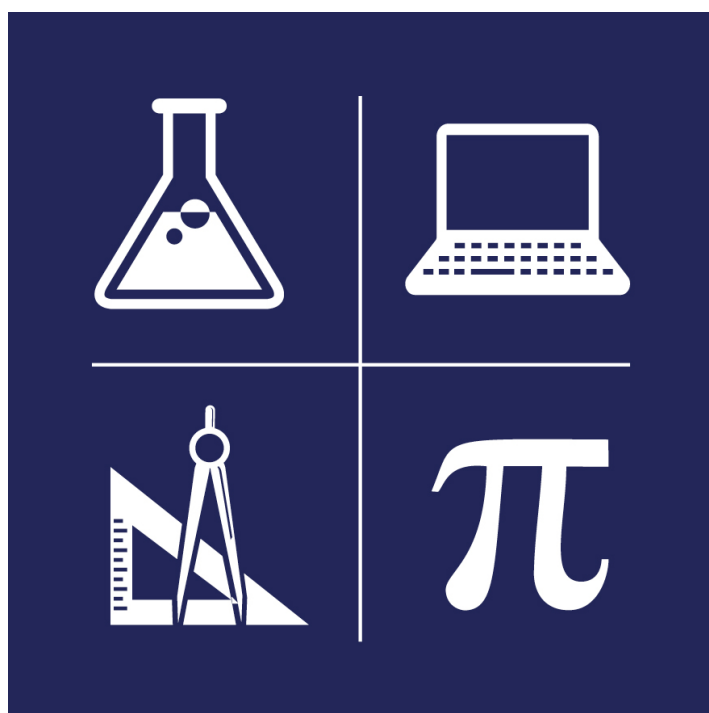
## Beginning Courses

Contact a Natural Resources Advisor before registering for courses:

- Kara Leonard, [kleonard@clackamas.edu](mailto:kleonard@clackamas.edu)

Code	Title	Credits
EFA-101N	Introduction to Natural Resources	1
FYE-101	First Year Experience Level I	2
HOR-111	Horticulture Practicum/Fall	2
FRP-130	Introduction to Wildland Firefighting (S-130/S-190/ 2-4 ICS-100/IS-700/L-180)	2-4
or FRP-101 & FRP-102	Basic Forest Management and Basic Forest Management Lab	
WET-110	Wastewater Operations I	3
or WET-111	Waterworks Operations I	

## Science, Technology, Engineering and Math (STEM)



If you enjoy asking big questions, recognizing patterns, studying forms and designs - or solving challenging problems - a career in STEM might be for you!

Stimulate your curiosity and creativity in our state-of-the-art science and technology facilities, with small class sizes and devoted faculty. Whether you're looking to build your skills in computer science, biology or engineering, CCC immerses students in real-world learning and the latest STEM research.

A STEM education at CCC can lead to many in-demand, high-paying jobs. Explore degrees and transfer opportunities today!

For more information please visit the **Science, Technology, Engineering, and Math (STEM) EFA** page.

## Programs

- [Architectural Engineering, AS, OSU](#)
- [Biological Engineering, AS, OSU \(p. 92\)](#)
- [Biology, AS, OSU \(p. 93\)](#)
- [Biology, AS, PSU \(p. 95\)](#)
- [Biology, AS, UO \(p. 96\)](#)
- [Biology AST \(p. 71\)](#)
- [Chemical Engineering, AS, OSU \(p. 97\)](#)
- [Civil Engineering, AS, OSU \(p. 99\)](#)
- [Civil Engineering, AS, PSU \(p. 101\)](#)
- [Computer & Network Administration AAS \(p. 135\)](#)
- [Computer & Network Administration CC \(p. 182\)](#)
- [Computer Application Specialist CC \(p. 184\)](#)
- [Computer Engineering, AS, PSU \(p. 102\)](#)
- [Computer Science ASOT \(p. 61\)](#)
- [Computer Science, AS, PSU \(p. 103\)](#)
- [Computer Science AST](#)
- [Construction Engineering Management, AS, OSU \(p. 104\)](#)
- [Ecological Engineering, AS, OSU \(p. 106\)](#)
- [Electrical Engineering, AS, OIT \(p. 107\)](#)
- [Electrical Engineering, AS, OSU \(p. 108\)](#)
- [Electrical Engineering, AS, PSU \(p. 110\)](#)
- [Environmental Engineering, AS, OSU \(p. 113\)](#)
- [Environmental Engineering, AS, PSU \(p. 115\)](#)
- [Front-End Web Development CC](#)
- [Full-Stack Web Development AAS](#)
- [Geology, AS, PSU \(p. 116\)](#)
- [Industrial/Manufacturing Engineering, AS, OSU \(p. 118\)](#)
- [Mechanical Engineering, AS, OIT \(p. 120\)](#)
- [Mechanical Engineering, AS, OSU \(p. 121\)](#)
- [Mechanical Engineering, AS, PSU \(p. 123\)](#)
- [Renewable Energy Engineering, AS, OIT \(p. 128\)](#)
- [STEM Transfer](#)

## Beginning Courses

Contact a **Science, Technology, Engineering and Math (STEM) Advisor** before registering for courses:

- Carrie Sandberg, [carriesa@clackamas.edu](mailto:carriesa@clackamas.edu)

Code	Title	Credits
EFA-101S	Introduction to STEM	2
FYE-101	First Year Experience Level I	2
MTH-111Z	Precalculus I: Functions	4
WR-121Z	Composition I	4

## Social Sciences, Human Services and Criminal Justice



Do you want to make a positive impact on the world? Do you want to understand the needs of others and serve the community? At CCC, you can explore human behavior, society and relationships, while preparing for a career in human services, criminal justice or social sciences like sociology and psychology.

CCC is a great place to start your education. Students who complete transfer coursework in social sciences, human services and criminal justice at CCC will be ready to pursue exciting degrees at four-year colleges and universities.

If you like solving complex problems and working with people, a degree or certificate in one of the social sciences, human services and criminal justice programs at Clackamas Community College can give you a jumpstart on a fulfilling career.

For more information please visit the **Social Sciences, Human Services and Criminal Justice EFA** page.

## Programs

- [Alcohol & Drug Counselor CC \(p. 216\)](#)
- [Criminal Justice AAS \(p. 139\)](#)
- [Criminal Justice, Corrections Option AAS \(p. 140\)](#)
- [Gerontology CC \(p. 193\)](#)
- [Gerontology for Health Care Professionals CC \(p. 219\)](#)



- [Human Services Generalist AAS \(p. 155\)](#)
- [Human Services Generalist CC \(p. 197\)](#)
- [Juvenile Corrections CC \(p. 200\)](#)
- [Nursing Assistant-Gerontology Specialist CC \(p. 224\)](#)
- Common Social Sciences, Human Services and Criminal Justice Transfer Majors
  - Criminal Justice
  - History
  - Human Development
  - Psychology
  - Sociology

## Beginning Courses

Contact a Social Sciences, Human Services and Criminal Justice Advisor before registering for courses:

- Jodi Stapleton, [jodis@clackamas.edu](mailto:jodis@clackamas.edu)

Code	Title	Credits
EFA-101J	Introduction to the Social Sciences, Human Services and Criminal Justice	2
FYE-101	First Year Experience Level I	2
LIB-101	Introduction to Library Research	1
MTH-098	College Math Foundations	4
or MTH-105Z	Math in Society	
or MTH-111Z	Precalculus I: Functions	
WR-121Z	Composition I	4

## Teaching and Education



Teaching and Education programs at CCC will help prepare you to enter the classroom as an effective teacher or become an educational leader. Open the door today to teaching, education administration and more.

Whether you're looking to get your CTE Licensure, an associate degree or Oregon Transfer degree (AAOT) - CCC has you covered. Get started on your journey toward teaching the age groups and subjects that interest you. Or gain the skills needed for many other educational professions.

If you're looking to make an impact on classrooms and shape the minds of the future - you'll feel at home in CCC's Education and Teaching programs.

For more information please visit the [Teaching and Education EFA](#) page.

## Programs

- [Career & Technical Education \(CTE\) Licensure Prep CC \(p. 181\)](#)
- [Early Childhood Education & Family Studies AAS \(p. 143\)](#)
- [Early Childhood Education & Family Studies CC \(p. 187\)](#)
- [Educación infantil y estudios familiares, AAS \(p. 145\)](#)
- [Educación infantil y estudios familiares, CC \(p. 187\)](#)
- [Elementary Education AAOT \(p. 51\)](#)
- Common Teaching and Education Transfer Majors
  - Education

## Beginning Courses

Contact a Teaching and Education Advisor before registering for courses:

- Stefanie Diaz-Zavala, [stefanie.diaz-zaval@clackamas.edu](mailto:stefanie.diaz-zaval@clackamas.edu)

Code	Title	Credits
ED-216	Foundations of Teaching & Education	4
FYE-101	First Year Experience Level I	2
HPE-295	Health & Fitness for Life	3
MTH-065	Algebra II	4
or MTH-211	Fundamentals of Elementary Math I	
or MTH-212	Fundamentals of Elementary Math II	
or MTH-213	Fundamentals of Elementary Math III	
WR-121Z	Composition I	4

# DEGREE AND CERTIFICATE INFORMATION & REQUIREMENTS

## Graduation Requirements

Requirements for degrees, certificates and diplomas are subject to approval by the Oregon Department of Education. In order to officially graduate and receive a diploma, students must submit an online application for graduation via Self Service in myClackamas. It's recommended that students submit a Graduation Application two terms prior to their anticipated term of completion. Students have until the sixth week of each term to apply for graduation for the current term. Graduation applications submitted after the sixth week will be handled in date order and may be processed for the current term as time allows.

## General Requirements

(applies to all degrees, certificates and diplomas)

You will be evaluated for degree and/or certificate requirements under the current catalog unless you request a prior catalog year. A catalog year is based on Clackamas Community College's academic year (Summer through Spring term).

You must meet the following conditions to request an exception:

- complete 25% of your degree and/or certificate requirements at CCC
- the prior catalog cannot be more than five years old (e.g. in 2023-24, the oldest catalog that can be used is 2018-19)
- earn at least one college credit at CCC in the catalog year selected

The awarding of the credential becomes official only when graduation information has been posted to your transcript.

## Multiple Degrees/Certificates of Completion

Students may earn multiple different degrees. Students must meet all the requirements for each degree or certificate.

Please note that a separate Graduation Application must be submitted for each individual degree and/or certificate of completion that you are attempting to earn.

## To Successfully Graduate

You will be more likely to graduate if you do the following:

- Send all official transcripts from regionally accredited colleges/universities to Graduation Services as soon as possible to have your coursework evaluated early
- Talk with an Academic Advisor early and often
- Complete all requisites for required courses
- Speak to your Academic Advisor to change your academic program of study if you change your mind about what you are studying
- If you plan to transfer to a four-year university or college, contact that institution to inquire about articulation agreements in your field of study

- Submit a Graduation Application two terms before you think you will be finished with classes so CCC can confirm you are on the track to completing your degree or certificate graduation requirements on time

## Commencement Ceremony

Students can graduate all four terms at CCC, Summer, Fall, Winter & Spring. A formal Commencement Ceremony is held at the end of Spring term in June. Students who complete degree or certificate requirements during preceding terms are invited to participate in the Spring term commencement ceremony.

Honors status is granted to students achieving a cumulative GPA of 3.5 or above on total credits earned at Clackamas. The honors status of Spring term graduates is determined by cumulative GPA through the preceding Winter term.

## Degree Programs

The following chart lists CCC degrees and certificates, comprised of related programs, which provide context for academic, technical, and career learning.

Degrees	Career Pathway	Less Than One Year	One Year	AAS	AS
Accounting AAS (p. 129)				X	
Accounting Clerk Certificate (p. 179)			X		
Administrative Professional AAS (p. 130)				X	
Administrative Assistant Certificate (p. 179)			X		
Administrative Assistant Training Certificate (p. 180)		X			
Construction Trades, General Apprenticeship AAS (limited entry) (p. 137)				X	
Manual Apprenticeship Trades Certificate (limited entry) (p. 223)	X				
Construction Trades, General Apprenticeship Certificate (limited entry) (p. 185)			X		
Electrician Apprenticeship Technologies AAS (p. 147)				X	
Limited License Electrician Apprenticeship Technologies Certificate (p. 221)	X				
Electrician Apprenticeship Technologies Certificate (p. 188)			X		
Auto Body/Collision Repair and Refinishing Technology AAS (p. 131)				X	
Auto Body/Collision Repair and Refinishing Technology Certificate (p. 216)	X				
Auto Collision Refinish Certificate	X				
Auto Collision Repair Certificate	X				
Automotive Service Technology AAS (p. 132)				X	
Under Car Technician - Automatic Transmission Certificate (p. 226)	X				
Under Car Technician - Manual Transmission Certificate (p. 226)	X				
Biology AS (p. 93)					X
Business AAS (p. 134)				X	

Degrees	Career Pathway	Less Than One Year	One Year	AAS	AS
Business Management Certificate (p. 181)			X		
Management Fundamentals Certificate (p. 222)	X				
Career & Technical Education (CTE) Licensure Prep Certificate (p. 181)		X			
Computer-Aided Drafting (CAD) Certificate (p. 183)		X			
Computer-Aided Manufacturing AAS (p. 136)				X	
Computer & Network Administration AAS (p. 135)				X	
Computer & Network Administration Certificate (p. 182)			X		
Computer Application Specialist Certificate (p. 184)			X		
Computer Science AS (p. 103)					X
Criminal Justice AAS				X	
Criminal Justice AAS, Corrections Option (p. 140)				X	
Dental Assistant Certificate (limited entry) (p. 186)			X		
Digital Media Communications AAS (p. 141)				X	
Entry Level Journalist Certificate (p. 218)	X				
Video Production Technician Certificate (p. 227)	X				
Early Childhood Education & Family Studies AAS (p. 143)				X	
Early Childhood Education & Family Studies Certificate (p. 187)			X		
Educación infantil y estudios familiares AAS (p. 145)				X	
Educación infantil y estudios familiares Certificate (p. 187)			X		
Electronics Engineering Technology AAS (p. 149)				X	
Electronics Engineering Technology Certificate (p. 189)			X		
Emergency Management Professional AAS (p. 151)				X	
Emergency Medical Technology Certificate (p. 190)			X		
Emergency Medical Technician Certificate	X				
Employment Skills Training Certificate (p. 191)		X			
Engineering AS					X
English AS (p. 111)					X
First-Line Supervisor Fundamentals Certificate (p. 191)		X			
Fitness Technology Certificate (p. 192)			X		
Full-Stack Web Development AAS				X	
Front-End Web Development Certificate			X		
Geographic Information Systems (GIS) Technology Certificate (p. 193)		X			
Geology AS (p. 116)					X
Gerontology Certificate (p. 193)			X		
Gerontology for Health Care Professionals Certificate (p. 219)	X				

Degrees	Career Pathway	Less Than One Year	One Year	AAS	AS
Nursing Assistant - Gerontology Specialist Certificate (p. 224)	X				
Healthcare Careers Certificate (p. 195)		X			
Horticulture AS (p. 117)					X
Horticulture AAS (p. 152)				X	
Horticulture Certificate (p. 195)			X		
Irrigation Technician Certificate (p. 221)	X				
Plant Health Management Certificate (p. 224)	X				
Human Resource Management Certificate (p. 196)			X		
Human Resource Management Essentials Certificate (p. 220)	X				
Human Services Generalist AAS (p. 155)				X	
Human Services Generalist Certificate (p. 197)			X		
Alcohol & Drug Counselor Certificate	X				
Industrial Maintenance Technology AAS (p. 157)				X	
Industrial Maintenance Technology Certificate (p. 198)			X		
Industrial Maintenance Technology Mechanical Maintenance Certificate (p. 199)			X		
Industrial Mechanics and Maintenance Technology Apprenticeship AAS (p. 158)				X	
Mechanics and Maintenance Apprenticeship Technologies: Trade Worker Apprenticeship Technologies Certificate (p. 223)	X				
Initial Welding Certificate		X			
Juvenile Corrections Certificate (p. 200)			X		
Landscape Management AAS (p. 159)				X	
Landscape Management AAS, Arboriculture Option (p. 161)				X	
Landscape Practices Certificate (p. 201)		X			
Machine Tool Technology AAS (p. 162)				X	
Machine Tool Technology Certificate (p. 202)			X		
Mastercam Certificate (p. 203)		X			
CNC Operator Certificate (p. 217)	X				
Marketing Certificate (p. 202)			X		
Integrated Marketing & Promotion Certificate (p. 220)	X				
Mechatronics Certificate (p. 203)		X			
Medical Assistant Certificate (limited entry) (p. 204)			X		
Medical Billing and Coding Certificate (limited entry) (p. 205)		X			
Microelectronics Systems Technology AAS (p. 164)				X	
Microelectronics Systems Technology Certificate (p. 206)			X		
Music AS (p. 124)					X
Music Performance & Technology AAS (p. 165)				X	

Degrees	Career Pathway	Less Than One Year	One Year	AAS	AS
Music Technology Certificate (p. 207)			X		
Nursing (RN) AAS (limited entry) (p. 167)				X	
Occupational Skills Training Certificate (p. 208)			X		
Organic Farming Certificate (p. 209)			X		
Phlebotomy Certificate (limited entry)		X			
Project Management AAS (p. 170)				X	
Project Management Certificate (p. 210)		X			
Project Management Tools & Techniques Certificate (p. 225)	X				
Renewable Energy Technology AAS (p. 171)				X	
Renewable Energy Technology Certificate (p. 210)			X		
Energy Systems Maintenance Technician Certificate (p. 217)	X				
Retail Management Certificate (p. 211)		X			
Water & Environmental Technology AAS (p. 172)				X	
Water & Environmental Technology Certificate (p. 212)			X		
High Purity Water Certificate (p. 195)		X			
Welding Technology AAS (p. 174)				X	
Welding Technology Certificate (p. 213)			X		
Entry Level Welder Certificate (p. 219)	X				
Wildland Fire Science Certificate (p. 214)			X		
Wilderness Survival & Leadership Certificate (p. 228)	X				
Wildland Fire Forestry Certificate (p. 228)	X				
Wildland FireFighter 1 Certificate (p. 228)	X				
Wildland Fire Management AAS (p. 177)				X	

## Degrees

### Associate of Arts Oregon Transfer (AAOT)

An AAOT is a two-year degree that has been designed for students who intend to transfer to a four-year college or university and pursue upper-division baccalaureate courses. CCC students who have earned an AAOT degree will be eligible for junior standing for the purposes of registration at any public university in Oregon.

### Associate of Science Oregon Transfer (ASOT)

An ASOT degree is a two-year degree designed for the student intending to transfer to a four-year college or public university in Oregon and pursuing upper-division baccalaureate courses in either Business or Computer Science. CCC students who have earned an ASOT degree and have met the transfer institution's lower-division general education degree requirements will be eligible for junior standing for the purposes of registration.

### Associate of Arts Transfer (AAT)

An Associate of Arts Transfer degree is a lower division major-specific undergraduate award that indicates satisfactory completion of a course of study that is intended to prepare students for transfer to a public university in Oregon and have junior standing in a specific Bachelor of Arts degree program.

### Associate of Science Transfer (AST)

An Associate of Science Transfer degree is a lower division major-specific undergraduate award that indicates satisfactory completion of a course of study that is intended to prepare students for transfer to a public university in Oregon and have junior standing in a specific Bachelor of Science degree program.

### Associate of General Studies (AGS)

The Associate of General Studies is a two-year foundational degree designed to provide flexibility and uses a variety of college-level course work to meet degree requirements. Students are encouraged to work closely with an academic advisor if they are planning to transfer to a four-year college or university upon completion of the AGS degree.

Program outcomes for the AGS degree include a two-year college degree experience that supports individual student needs and interests.

### Associate of Science (AS)

The Associate of Science degree is designed for students who wish to take the first two years of their coursework at Clackamas Community College, then transfer to a particular four-year institution to complete a degree in the designated discipline. The Associate of Science degree has both general education and discipline-specific requirements. In addition, this degree is institution-specific, and the courses listed have been agreed on by the receiving institution as acceptable towards the four-year degree. Completing the Associate of Science degree does not guarantee acceptance into schools or departments that have special admissions requirements. It is important for the student to meet with an advisor to ensure that they fully understand the degree requirements.

### Oregon Transfer Module (OTM)

The OTM represents approximately half of an associate's degree (45 credits). The OTM is designed for students who wish to transfer to a public university in Oregon or another Oregon community college. Completion of the OTM can help those students taking courses at multiple post-secondary institutions by ensuring transferability of coursework. This is not a degree or certificate but is documentation on a student's transcript that they have met a subset of common general education requirements. Please refer to the [OTM \(p. 84\)](#) page for more information. Students interested in the OTM should meet with an academic advisor in Student Services.

### Associate of Applied Science (AAS)

Associate of Applied Science degrees are career technical in nature and are intended primarily to lead students directly to employment in a specific career. Occupational licensure, career advancement and further study at a four-year college or university are additional opportunities for students earning an AAS degree. Associate of Applied Science degrees are awarded to students who complete the requirements of a specified, two-year career and technical program and are offered in a number of interest areas (see [Degree Programs \(p. 38\)](#)).

## Certificates of Completion (CC)

Certificates of Completion are career technical in nature and are designed to prepare students for entry into the workforce. Occupational licensure, career advancement, and further study at a four-year college or university are additional possible opportunities for students earning Certificates of Completion at CCC. Certificates of Completion can be a one-year program or a less-than-one-year program.

## Career Pathway Certificates (CPCC)

Career Pathway Certificates of Completion programs are designed to acknowledge proficiency in a particular technical skill grouping with occupational program outcomes. Please refer to the specific AAS or certificate program for certificate/degree requirements.

## General AAS, CC, and CPCC Requirements

General requirements for obtaining an AAS or CC include:

- Complete a minimum of 90 credits for an AAS degree
- Establish a cumulative 2.0 GPA at CCC
- Establish residency by earning a minimum of 25% of the degree or certificate credits at CCC
- See [Degree and Certificate Information & Requirements \(p. 38\)](#) for additional general requirements for all degrees and certificates
- Specific discipline requirements are listed on each program page.

## Diplomas

### Adult High School Diploma (AHSD)

Clackamas Community College is authorized by the State Board of Education to award the Adult High School Diploma (AHSD). Students who enter the college's high school diploma program may transfer unmodified credits from accredited high schools. AHSD students may also enroll in college credit classes and may receive dual credit.

Students who are under 18 years old or whose K-12 cohort has not yet graduated must provide the AHSD program with one of the following:

- A Release from Compulsory Attendance from their boundary high school to be kept on file. A release must be obtained before commencing participation in the program. Instructors will not provide necessary signatures for a student to register for Adult Secondary Education courses until a Release from Compulsory Attendance is provided, *or*
- A contractual referral from their boundary high school which allows students to participate in the AHSD program while earning credits to transfer back to and graduate from their boundary high school.

## Requirements for Adult High School Diploma

Complete a minimum of 24 high school units:

Subject	Units
Language Arts <sup>1</sup>	4
Mathematics	3
Science	3
Social Studies	3
Health Education	1
Physical Education	1
Career & Technical Education, the Arts, and/or Second Language <sup>2</sup>	3
Electives	6
<b>Total:</b>	<b>24</b>

<sup>1</sup> Shall include the equivalent of one unit in written composition.

<sup>2</sup> Any one area or in combination.

Additionally, students must develop a personalized learning plan, show essential skills competency, and meet residency requirements.

## General Education Development (GED)

CCC offers courses to support students in passing the four exams necessary to earn a GED certificate. Students who are under 18 years old or whose K-12 cohort has not yet graduated must provide the GED program with one of the following:

- A Release from Compulsory Attendance from their boundary high school, or
- A contractual referral from their boundary high school. Students who do not need preparatory courses can take the GED exam at the Testing Center by scheduling through GED.com. Students under 18 years old must provide the Testing Center with a Release from Compulsory Attendance before scheduling exams.



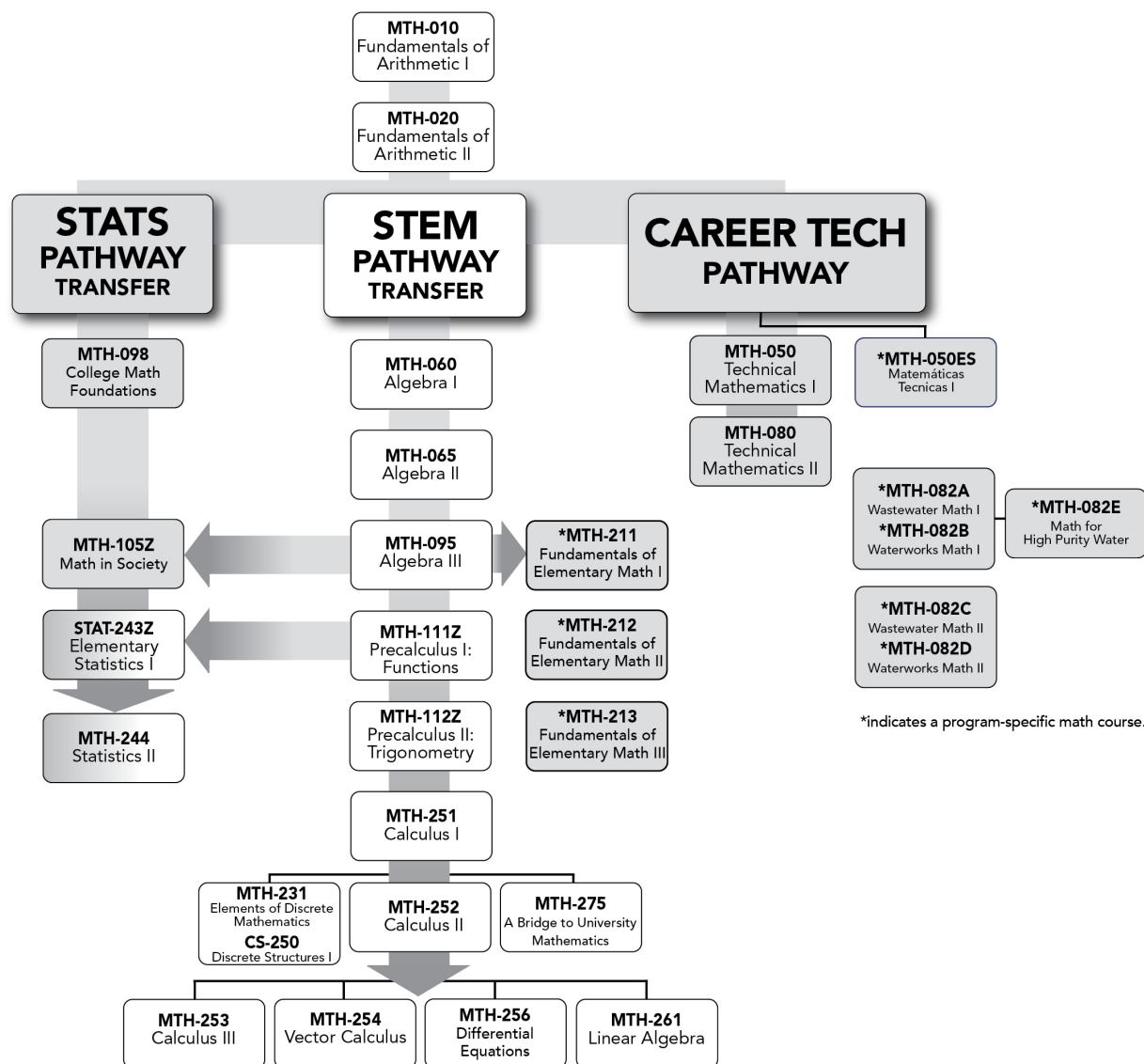
# Math Course Pathways and Prerequisites

This math prerequisite chart is designed to help you map out the courses you will take to complete your studies or to meet prerequisites for courses you intend to take.

Identify your math placement level by visiting Testing and Placement Services to meet with a Placement Advising for Student Success (PASS) staff as required by specific programs. Please visit [www.clackamas.edu/pass](http://www.clackamas.edu/pass) to learn about our placement steps and our PASS Program.

Contact our academic advising team at [advising@clackamas.edu](mailto:advising@clackamas.edu) to identify the right math pathway to meet your academic program or career goal.

## Math Course Pathways and Prerequisites



## Description of Image

The image shows three pathways of math courses for students to plan their courses. Stats Pathway Transfer, STEM Pathway Transfer, and Career Tech Pathway.

Complete MTH-010 Fundamentals of Arithmetic I and MTH-020 Fundamentals of Arithmetic II before starting a path.

**Stats Pathway Transfer:** MTH-098 College Math Foundations, MTH-105Z Math in Society, STAT-243Z Elementary Statistics I, MTH-244 Statistics II

### STEM Pathway Transfer:

- **Path One:** MTH-060 Algebra I, MTH-065 Algebra II, MTH-095 Algebra III, MTH-111Z Precalculus I: Functions, MTH-112Z Precalculus II: Trigonometry, MTH-251 Calculus I. MTH-231 Elements of Discrete Mathematics or CS-250 Discrete Structures I or MTH-252 Calculus II or MTH-275 A Bridge to University Mathematics
- **Path Two:** MTH-060 Algebra I, MTH-065 Algebra II, MTH-095 Algebra III. MTH-211 Fundamentals of Elementary Math I or MTH-212 Fundamentals of Elementary Math II or MTH-213 Fundamentals of Elementary Math III
- **Path Three:** MTH-060 Algebra I, MTH-065 Algebra II, MTH-095 Algebra III, MTH-105Z Math in Society, STAT-243Z Elementary Statistics I, MTH-244 Statistics II
- **Path Four:** MTH-060 Algebra I, MTH-065 Algebra II, MTH-095 Algebra III, MTH-111Z Precalculus I: Functions, STAT-243Z Elementary Statistics I, MTH-244 Statistics II

### Career Tech Pathway:

- **Path One:** MTH-050 Technical Mathematics I, MTH-080 Technical Mathematics II
- **Path Two (Program-Specific):** MTH-050ES Matemáticas Técnicas I
- **Path Three (Program-Specific):** MTH-082A Wastewater Math I, MTH-082B Waterworks Math I, MTH-082C Wastewater Math II, MTH-082D Waterworks Math II, MTH-082E Math for High Purity Water

## Math Placement Resources:

### PASS Office

503-594-3283

[www.clackamas.edu/pass](http://www.clackamas.edu/pass)

### Academic Advising

503-594-3475

[www.clackamas.edu/advising](http://www.clackamas.edu/advising)

### Math Lab/Tutoring

503-594-63191

[www.clackamas.edu/tutoring](http://www.clackamas.edu/tutoring)

### Math Department

503-594-3395

## Writing Course Pathways and Prerequisites

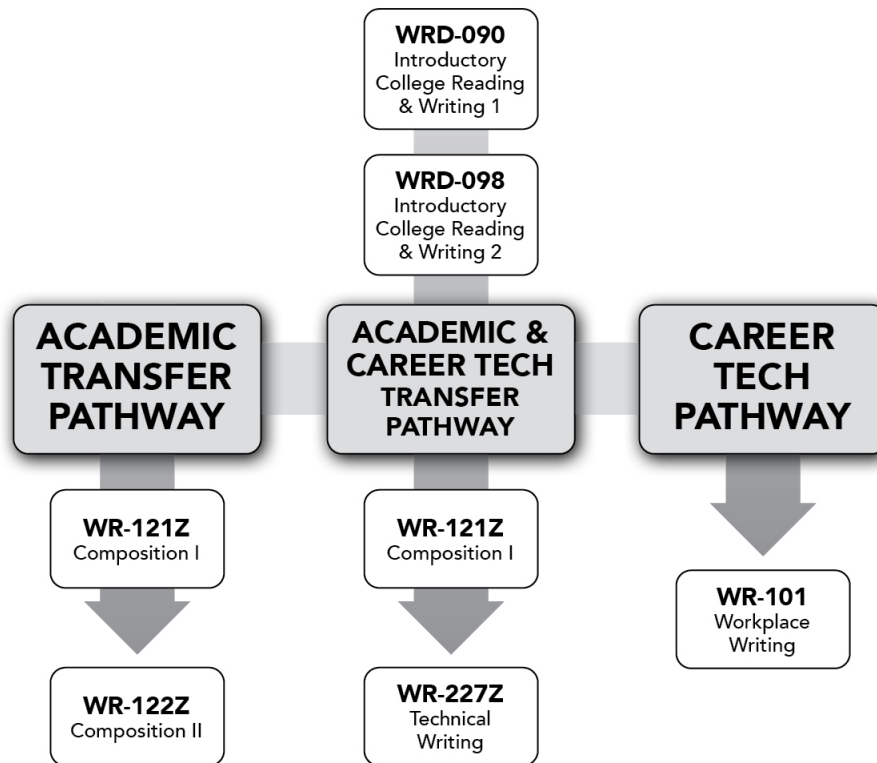
This writing prerequisites chart is designed to help you map out the courses you will take to complete your degree.

To determine your reading and writing placement level, visit Testing and Placement Services to meet with a Placement Advising for Student Success (PASS) staff or take a placement test. Some programs require the placement test. Please visit [www.clackamas.edu/pass](http://www.clackamas.edu/pass) to learn about our placement steps and our PASS Program.

If you are a non-native English speaker interested in improving your reading and writing English skills, please contact our English for Speakers of Other Languages (ESOL) Department for more information.

## Writing Course Pathways and Prerequisites

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## Description of Image

Writing prerequisite chart for courses needed to complete CCC academic program goals, or to meet prerequisites for other courses.

Complete one of the following paths:

- **Academic Transfer Pathway:** WRD-090 Introductory College Reading & Writing 1, WRD-098 Introductory College Reading & Writing 2, WR-121Z Composition I, WR-122Z Composition II
- **Academic & Career Tech Transfer Pathway:** WRD-090 Introductory College Reading & Writing 1, WRD-098 Introductory College Reading & Writing 2, WR-121Z Composition I, WR-227Z Technical Writing
- **Career Tech Pathway:** WRD-090 Introductory College Reading & Writing 1, WRD-098 Introductory College Reading & Writing 2, WR-101 Workplace Writing

Meets writing requirements for many career tech programs and certificates: WR-101 Workplace Writing, WR-121Z Composition I

Meets writing requirements for many transfer degrees and certificates: WR-121Z Composition I, WR-122Z Composition II, WR-227Z Technical Writing

## Writing Placement Resources:

**PASS Office** 503-594-3283 [www.clackamas.edu/pass](http://www.clackamas.edu/pass)

**Academic Advising** 503-594-3475 [www.clackamas.edu/advising](http://www.clackamas.edu/advising)

**English Department** 503-594-3254

**Skills Development/Reading** 503-594-3028

**English for Speakers of Other Languages (ESOL) Department** 503-594-3234

**Writing Center/Tutoring** 503-594-6275 [www.clackamas.edu/tutoring](http://www.clackamas.edu/tutoring)

# ASSOCIATE OF ARTS OREGON TRANSFER DEGREE (AAOT)

An AAOT is a two-year degree that has been designed for the student intending to transfer to a four-year college or university and pursuing upper division baccalaureate courses. CCC students who have earned an AAOT degree will be eligible for junior standing for the purposes of registration at any at any public university in Oregon.

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

### Arts & Letters <sup>1</sup>

- interpret and engage in the Arts & Letters, making use of the creative process to enrich the quality of life;
- critically analyze values and ethics within a range of human experience and expression to engage more fully in local and global issues.

### Cultural Literacy

- identify and analyze complex practices, values, and beliefs and the culturally and historically defined meanings of difference.

### Mathematics

- use appropriate mathematics to solve problems;
- recognize which mathematical concepts are applicable to a scenario, apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results.

### Science or Computer Science

- gather, comprehend, and communicate scientific and technical information in order to explore ideas, models, and solutions and generate further questions;
- apply scientific and technical modes of inquiry, individually, and collaboratively, to critically evaluate existing or alternative explanations, solve problems, and make evidence-based decisions in an ethical manner;
- assess the strengths and weaknesses of scientific studies and critically examine the influence of scientific and technical knowledge on human society and the environment.

### Social Science

- apply analytical skills to social phenomena in order to understand human behavior;
- apply knowledge and experience to foster personal growth and better appreciate the diverse social world in which we live.

### Speech/Oral Communication

- engage in ethical communication processes that accomplish goals;
- respond to the needs of diverse audiences and contexts;
- build and manage relationships.

## Writing

- read actively, think critically, and write purposefully and capably for academic and, in some cases, professional audiences;
- locate, evaluate, and ethically utilize information to communicate effectively;
- demonstrate appropriate reasoning in response to complex issues.

## Information Literacy <sup>2</sup>

- formulate a problem statement;
- determine the nature and extent of the information needed to address the problem;
- access relevant information effectively and efficiently;
- evaluate information and its source critically;
- understand many of the economic, legal, and social issues surrounding the use of information.

<sup>1</sup> Arts & Letters refers to works of art, whether written, crafted, designed, or performed and documents of historical or cultural significance.

<sup>2</sup> Information Literacy outcomes and criteria will be embedded in the Writing Foundational Requirements courses. At Clackamas, WR-121Z Composition I and WR-122Z Composition II meet that requirement.

## Associate of Arts Oregon Transfer (AAOT)

**Program Code:** AA.OREGONTRANSFER

The Associate of Arts Oregon Transfer (AAOT) is a two-year degree that has been designed for the student intending to transfer to a four-year college or university and pursuing upper division baccalaureate courses. CCC students who have earned an AAOT degree will be eligible for junior standing for the purposes of registration at any at any public university in Oregon.

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- interpret and engage in the Arts & Letters, making use of the creative process to enrich the quality of life;
- critically analyze values and ethics within a range of human experience and expression to engage more fully in local and global issues.
- identify and analyze complex practices, values, and beliefs and the culturally and historically defined meanings of difference.
- use appropriate mathematics to solve problems;
- recognize which mathematical concepts are applicable to a scenario, apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results.
- gather, comprehend, and communicate scientific and technical information in order to explore ideas, models, and solutions and generate further questions;
- apply scientific and technical modes of inquiry, individually, and collaboratively, to critically evaluate existing or alternative explanations, solve problems, and make evidence-based decisions in an ethical manner;



- assess the strengths and weaknesses of scientific studies and critically examine the influence of scientific and technical knowledge on human society and the environment.
- apply analytical skills to social phenomena in order to understand human behavior;
- apply knowledge and experience to foster personal growth and better appreciate the diverse social world in which we live.
- engage in ethical communication processes that accomplish goals;
- respond to the needs of diverse audiences and contexts;
- build and manage relationships.
- read actively, think critically, and write purposefully and capably for academic and, in some cases, professional audiences;
- locate, evaluate, and ethically utilize information to communicate effectively;
- demonstrate appropriate reasoning in response to complex issues.
- formulate a problem statement;
- determine the nature and extent of the information needed to address the problem;
- access relevant information effectively and efficiently;
- evaluate information and its source critically;
- understand many of the economic, legal, and social issues surrounding the use of information.

## Requirements

Complete 90 credits from the following:

## Foundational Skills

### Writing

- 8 Credits
- Information literacy will be included in the Writing Requirement

Code	Title	Credits
WR-121Z	Composition I	4
WR-122Z	Composition II	4
or WR-227Z	Technical Writing	

### Oral Communication

- 1 Course

Code	Title	Credits
COMM-111Z	Public Speaking	4

### Mathematics

- 1 Course

Code	Title	Credits
MTH-105Z	Math in Society	4
MTH-111Z	Precalculus I: Functions	4
MTH-112Z	Precalculus II: Trigonometry	4
MTH-211	Fundamentals of Elementary Math I	4
MTH-212	Fundamentals of Elementary Math II	4
MTH-213	Fundamentals of Elementary Math III	4
MTH-244	Statistics II	4
MTH-251	Calculus I	5

Code	Title	Credits
MTH-252	Calculus II	5
MTH-253	Calculus III	5
MTH-254	Vector Calculus	5
MTH-256	Differential Equations	4
MTH-261	Linear Algebra	4
STAT-243Z	Elementary Statistics I	4

## Health & Physical Education

- At least 3 credits

Code	Title	Credits
HE-201	Personal Training	3
HE-202	Introduction to Fitness Technology Careers	1
HE-204	Nutrition & Weight Control	3
HE-207	Introduction to Plant Based Living	3
HE-223	Sports Nutrition	3
HE-249	Mental Health	3
HE-250	Personal Health	3
HE-252	First Aid/CPR/AED	3
HE-261	Community CPR	1
HPE-295	Health & Fitness for Life	3
PE-185	Physical Education	1
PE-194	Professional Activities	1
PE-240	Strength & Conditioning Theory & Techniques	3
PE-260	Care and Prevention of Athletic Injuries	2
PE-270	Sport and Exercise Psychology	3
PE-294	Professional Activities	1
PE-294A	Philosophy of Coaching	2

## General Education Distribution Areas

### Arts & Letters

- 3 courses from 2 or more disciplines
- Each course must be at least 3 credits

### Arts & Letters Course List

Code	Title	Credits
ART-101	Art Appreciation	3
ART-115	Basic Design: 2-Dimensional Design	4
ART-117	Basic Design: 3-Dimensional Composition	4
ART-131	Introduction to Drawing	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ART-232	Life Drawing (Figure Emphasis)	4
ART-233	Drawing for Comics	4
ART-250	Ceramics/Beginning	4
ART-251	Ceramics/Hand-Building I	4
ART-252	Ceramics/Wheel-Throwing I	4
ART-253	Ceramics/Intermediate	4
ART-254	Ceramics/Hand-Building II	4
ART-255	Ceramics/Wheel-Throwing II	4

Code	Title	Credits	Code	Title	Credits
ART-257	Metalsmithing/Jewelry	4	ENG-271	World Literature: Ancient Through Classical Times	4
ART-281	Painting: Still Life/Beginning	4	ENG-272	World Literature: Early Middle Ages through the 18th Century	4
ART-282	Painting: The Figure/Beginning	4	ENG-273	World Literature: the 19th Through 21st Centuries	4
ART-283	Painting: Landscapes/Beginning	4	ENG-295	Revolutionary Film	4
ART-284	Painting: Still Life/Intermediate	4	ENG-296	Adaptation: Literature Into Film	4
ART-285	Painting: The Figure/Intermediate	4	FR-201	Second-Year French I	4
ART-286	Painting: Landscapes/Intermediate	4	FR-202	Second-Year French II	4
ART-291	Sculpture	4	FR-203	Second-Year French III	4
ART-292	Sculpture (Figure Emphasis)	4	HUM-235	Perspectives on Terrorism	4
ART-293	Sculpture (Metal Emphasis)	4	HUM-237	Perspectives on Democracy and Dialogue	4
ASL-201	Second-Year American Sign Language I	4	HUM-240	American Military Conflict: Wars of National Identity	4
ASL-202	Second-Year American Sign Language II	4	HUM-241	American Military Conflict: Global War	4
ASL-203	Second-Year American Sign Language III	4	HUM-242	American Military Conflict: Asymmetric Warfare	4
COMM-112	Persuasive Speaking	4	J-211	Mass Media & Society	4
COMM-126	Introduction to Gender Communication	4	J-216	Writing for Media	4
COMM-140	Introduction to Intercultural Communication	4	MUS-105	Music Appreciation	3
COMM-212	Mass Media & Society	4	MUS-111	Music Theory I	3
COMM-218Z	Interpersonal Communication	4	MUS-112	Music Theory I	3
COMM-219	Small Group Discussion	4	MUS-113	Music Theory I	3
COMM-227	Nonverbal Communication	4	MUS-205	Music Literature: History of Jazz	4
ENG-104	Introduction to Literature: Fiction	4	MUS-206	Music Literature: History of Rock	4
ENG-105	Introduction to Literature: Drama	4	MUS-211	Music Theory II	3
ENG-106	Introduction to Literature: Poetry	4	MUS-212	Music Theory II	3
ENG-107	World Literature: Ancient Through Classical Times	4	MUS-213	Music Theory II	3
ENG-108	World Literature: Early Middle Ages through the 18th Century	4	PHL-101	Philosophical Problems	4
ENG-109	World Literature: The 19th through 21st Centuries	4	PHL-102	Ethics	4
ENG-116	Introduction to Literature: Comics	4	PHL-103	Critical Reasoning	4
ENG-121	Mystery Fiction	4	PHL-205	Moral Issues	4
ENG-130	Leadership in Literature	4	PHL-210	Philosophy of Religion	4
ENG-194	Introduction to Film	4	PHL-213	Asian Philosophy	4
ENG-195	American Film	4	PHL-216	Ancient Philosophy	4
ENG-201	Shakespeare	4	R-101	Judaism and Foundations of Religion	4
ENG-202	Shakespeare	4	R-102	Christianity and Islam	4
ENG-204	British Literature: Ancient to Enlightenment	4	R-103	Asian Religions	4
ENG-205	British Literature: Romantic to Contemporary	4	R-204	History of Christianity	4
ENG-213	U.S. Latinx Literature	4	R-210	World Religions	4
ENG-218	Arthurian Literature	4	R-211	History of the Old Testament	4
ENG-226	Popular Literature	4	R-212	History of the New Testament	4
ENG-240	Native American Mythology	4	SPN-201	Second-Year Spanish I	4
ENG-241	Norse Mythology	4	SPN-202	Second-Year Spanish II	4
ENG-243	African Mythology	4	SPN-203	Second-Year Spanish III	4
ENG-250	Greek Mythology	4	SSC-237	Perspectives on Democracy and Dialogue	4
ENG-251	Celtic Mythology	4	TA-101	Appreciation of Theatre	4
ENG-252	Hindu Mythology	4	TA-102	Appreciation of Theatre	4
ENG-253	American Literature: Pre-Columbian to Civil War	4	TA-103	Appreciation of Theatre	4
ENG-254	American Literature: 1865 to Present	4	TA-111	Fundamentals of Technical Theatre	4
ENG-255	American Literature: Topics in American Literature	4	TA-122	Costuming II	3
ENG-260	Introduction to Women Writers	4	TA-123	Costuming III	3
ENG-261	Literature of Science Fiction	4	TA-141	Acting I	4
ENG-270	Introduction to Literary Criticism	4			

Code	Title	Credits
TA-142	Acting II	4
TA-143	Acting III	4
TA-153	Theatre Rehearsal & Performance	1-3
WR-240	Creative Nonfiction Writing I	4
WR-241	Fiction Writing I	4
WR-242	Poetry Writing I	4
WR-243	Playwriting I	4
WR-244	Fiction Writing II	4
WR-245	Poetry Writing II	4
WR-247	Playwriting II	4
WR-248	Bookmaking: Design and Layout	4
WR-262	Introduction to Screenwriting	4
WR-263	Screenwriting II	4
WR-265	Digital Storytelling	4
WR-270	Creative Nonfiction Writing II: Food Writing	4
WS-101	Introduction to Women's Studies	4

## Social Science

- 4 courses from 2 or more disciplines
- Each course must be at least 3 credits

### Social Science Course List

Code	Title	Credits
ANT-101	Physical Anthropology	4
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
CJA-101	Criminology	4
CJA-201	Juvenile Delinquency	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HE-164	Body & Drugs II: Alcohol	3
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-130	Oddballs and Outcasts in Western Civilization	4
HST-131	History of Crime & Punishment in Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4
HST-138	History of Love, Marriage and the Family In Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4

Code	Title	Credits
HST-203	History of the United States	4
HUM-237	Perspectives on Democracy and Dialogue	4
PS-200	Introduction to Political Science	4
PS-201	American Government and Politics	4
PS-203	State and Local Governments	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PS-297	Introduction to Environmental Politics	4
PSY-200	Introduction to Psychology: Part 1	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-215	Introduction to Developmental Psychology	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4
SOC-210	Marriage, Family, & Intimate Relations	4
SOC-225	Social Problems	4
SSC-235	Perspectives on Terrorism	4
SSC-237	Perspectives on Democracy and Dialogue	4
SSC-240	American Military Conflict: Wars of National Identity	4
SSC-241	American Military Conflict: Global War	4
SSC-242	American Military Conflict: Asymmetric Warfare	4
WS-101	Introduction to Women's Studies	4

## Science/Math/Computer Science

- 4 courses from at least 2 disciplines including at least 3 laboratory courses in biological and/or physical science
- Each course must be at least 3 credits

### Science/Math/Computer Science Course List

Code	Title	Credits
ASC-175	Integrated Science Inquiry	4
ASC-176	Integrated Science Inquiry	4
ASC-177	Integrated Science Inquiry	4
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-112	General Biology for Health Sciences	4
BI-160	Bird Identification & Taxonomy	3
BI-160L	Bird Identification & Taxonomy with Lab	4
BI-165C	Natural History of the Oregon Coast	3
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-165D	Natural History of the Western Deserts	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4
BI-211	General Biology for Science Majors (Cellular Biology)	5

Code	Title	Credits
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-231	Human Anatomy & Physiology I	4
BI-232	Human Anatomy & Physiology II	4
BI-233	Human Anatomy & Physiology III	4
BI-234	Introductory Microbiology	4
CH-104	Introductory Chemistry	5
CH-105	Introductory Chemistry	5
CH-106	Introductory Chemistry	5
CH-112	Chemistry for Health Sciences	4
CH-114	Chemistry in Art	4
CH-221	General Chemistry	5
CH-222	General Chemistry	5
CH-223	General Chemistry	5
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
G-101	General Geology	4
G-102	General Geology	4
G-103	General Geology	4
G-148	Volcanoes & Earthquakes	4
G-201	General Geology	4
G-202	General Geology	4
G-203	General Geology	4
GS-104	Earth System Science	4
GS-105	Earth System Science	4
GS-106	Earth System Science	4
GS-107	Astronomy	4
MTH-105Z	Math in Society	4
MTH-111Z	Precalculus I: Functions	4
MTH-112Z	Precalculus II: Trigonometry	4
MTH-211	Fundamentals of Elementary Math I	4
MTH-212	Fundamentals of Elementary Math II	4
MTH-213	Fundamentals of Elementary Math III	4
MTH-244	Statistics II	4
MTH-251	Calculus I	5
MTH-252	Calculus II	5
MTH-253	Calculus III	5
MTH-254	Vector Calculus	5
MTH-256	Differential Equations	4
MTH-261	Linear Algebra	4
PH-121	Astronomy	4
PH-122	General Astronomy	4
PH-123	General Astronomy	4
PH-201	General Physics	5
PH-202	General Physics	5
PH-203	General Physics	5
PH-211	General Physics With Calculus	5
PH-212	General Physics With Calculus	5

Code	Title	Credits
PH-213	General Physics With Calculus	5
STAT-243Z	Elementary Statistics I	4
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## Cultural Literacy

• 1 Course

### Cultural Literacy Course List

Code	Title	Credits
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ASL-201	Second-Year American Sign Language I	4
ASL-202	Second-Year American Sign Language II	4
ASL-203	Second-Year American Sign Language III	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-213	U.S. Latinx Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-243	African Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-261	Literature of Science Fiction	4
ENG-271	World Literature: Ancient Through Classical Times	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4
ENG-273	World Literature: the 19th Through 21st Centuries	4
ENG-295	Revolutionary Film	4
FR-201	Second-Year French I	4
FR-202	Second-Year French II	4
FR-203	Second-Year French III	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4

Code	Title	Credits
HST-130	Oddballs and Outcasts in Western Civilization	4
HST-131	History of Crime & Punishment in Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4
HST-138	History of Love, Marriage and the Family In Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
HUM-235	Perspectives on Terrorism	4
HUM-237	Perspectives on Democracy and Dialogue	4
HUM-240	American Military Conflict: Wars of National Identity	4
HUM-241	American Military Conflict: Global War	4
HUM-242	American Military Conflict: Asymmetric Warfare	4
MUS-206	Music Literature: History of Rock	4
PHL-101	Philosophical Problems	4
PHL-102	Ethics	4
PHL-103	Critical Reasoning	4
PHL-205	Moral Issues	4
PHL-210	Philosophy of Religion	4
PHL-213	Asian Philosophy	4
PHL-216	Ancient Philosophy	4
PS-200	Introduction to Political Science	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-204	History of Christianity	4
R-210	World Religions	4
R-211	History of the Old Testament	4
R-212	History of the New Testament	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4
SOC-210	Marriage, Family, & Intimate Relations	4
SOC-225	Social Problems	4
SPN-201	Second-Year Spanish I	4
SPN-202	Second-Year Spanish II	4
SPN-203	Second-Year Spanish III	4
SSC-235	Perspectives on Terrorism	4
SSC-237	Perspectives on Democracy and Dialogue	4
SSC-240	American Military Conflict: Wars of National Identity	4
SSC-241	American Military Conflict: Global War	4

Code	Title	Credits
SSC-242	American Military Conflict: Asymmetric Warfare	4
WR-241	Fiction Writing I	4
WR-244	Fiction Writing II	4
WS-101	Introduction to Women's Studies	4

## Other Requirements

### Elective Courses

- Any college-level course that would bring total credits to 90 credits
- Other courses numbered 100 or above may be used in this area, which may include up to 12 credits of career technical courses
- Please refer to the [Elective Course List](#) (p. 234) for courses that may be included

### Notes

- All courses must be passed with a C or better
- No course may be used to satisfy more than one requirement or distribution area

## Elementary Education (AAOT)

**Program Code:** AA.OTELEMED

If you are interested in becoming an elementary teacher or pursuing a career in the field of education, this program can give you a strong foundation for your goals. The recommended courses will help you to explore key topics related to student learning, teaching strategies and what is required to become a professional educator. In collaboration with your advisor, use the suggested courses of study to select your courses to ensure they will meet requirements at any Oregon public university or participating private university.

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply critical thinking to analyze social issues necessary to support the function of public education;
- describe culturally-responsive pedagogy and integration of social justice into a teaching philosophy;
- identify the ethics and responsibilities necessary to obtain a professional license in the teaching field and clarify career confirmation.

## Requirements

Complete 90 credits from the following:

## Foundational Skills

### Writing

- 8 credits
- Information literacy will be included in the Writing requirement

Code	Title	Credits
WR-121Z	Composition I	4
WR-122Z	Composition II	4



## Oral Communication

- 1 course

Code	Title	Credits
COMM-111Z	Public Speaking	4

## Mathematics

- 3 courses

Code	Title	Credits
MTH-211	Fundamentals of Elementary Math I	4
MTH-212	Fundamentals of Elementary Math II	4
MTH-213	Fundamentals of Elementary Math III	4

## Health

- At least 3 credits

Code	Title	Credits
HPE-295	Health & Fitness for Life	3

## General Education Distribution Areas

### Arts & Letters

- 3 courses from 2 or more disciplines
- Each course must be at least 3 credits

#### Arts & Letters Course List

Code	Title	Credits
ENG-104	Introduction to Literature: Fiction	4
or ENG-105	Introduction to Literature: Drama	
or ENG-106	Introduction to Literature: Poetry	
<i>AND</i>		
ART-115	Basic Design: 2-Dimensional Design	4
or ART-131	Introduction to Drawing	
<i>AND</i>		
<i>1 course from the following (200-level world language recommended)</i>		
ART-101	Art Appreciation	3
ART-115	Basic Design: 2-Dimensional Design	4
ART-117	Basic Design: 3-Dimensional Composition	4
ART-131	Introduction to Drawing	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ART-232	Life Drawing (Figure Emphasis)	4
ART-233	Drawing for Comics	4
ART-250	Ceramics/Beginning	4
ART-251	Ceramics/Hand-Building I	4
ART-252	Ceramics/Wheel-Throwing I	4
ART-253	Ceramics/Intermediate	4
ART-254	Ceramics/Hand-Building II	4
ART-255	Ceramics/Wheel-Throwing II	4
ART-257	Metalsmithing/Jewelry	4
ART-281	Painting: Still Life/Beginning	4
ART-282	Painting: The Figure/Beginning	4

Code	Title	Credits
ART-283	Painting: Landscapes/Beginning	4
ART-284	Painting: Still Life/Intermediate	4
ART-285	Painting: The Figure/Intermediate	4
ART-286	Painting: Landscapes/Intermediate	4
ART-291	Sculpture	4
ART-292	Sculpture (Figure Emphasis)	4
ART-293	Sculpture (Metal Emphasis)	4
ASL-201	Second-Year American Sign Language I	4
ASL-202	Second-Year American Sign Language II	4
ASL-203	Second-Year American Sign Language III	4
COMM-112	Persuasive Speaking	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-212	Mass Media & Society	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
COMM-227	Nonverbal Communication	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-116	Introduction to Literature: Comics	4
ENG-121	Mystery Fiction	4
ENG-130	Leadership in Literature	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	
ENG-218	Arthurian Literature	4
ENG-226	Popular Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-243	African Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-261	Literature of Science Fiction	4
ENG-270	Introduction to Literary Criticism	4
ENG-271	World Literature: Ancient Through Classical Times	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4

Code	Title	Credits
ENG-273	World Literature: the 19th Through 21st Centuries	4
ENG-295	Revolutionary Film	4
ENG-296	Adaptation: Literature Into Film	4
FR-201	Second-Year French I	4
FR-202	Second-Year French II	4
FR-203	Second-Year French III	4
HUM-235	Perspectives on Terrorism	4
HUM-237	Perspectives on Democracy and Dialogue	4
HUM-240	American Military Conflict: Wars of National Identity	4
HUM-241	American Military Conflict: Global War	4
HUM-242	American Military Conflict: Asymmetric Warfare	4
J-211	Mass Media & Society	4
J-216	Writing for Media	4
MUS-105	Music Appreciation	3
MUS-111	Music Theory I	3
MUS-112	Music Theory I	3
MUS-113	Music Theory I	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-211	Music Theory II	3
MUS-212	Music Theory II	3
MUS-213	Music Theory II	3
PHL-101	Philosophical Problems	4
PHL-102	Ethics	4
PHL-103	Critical Reasoning	4
PHL-205	Moral Issues	4
PHL-210	Philosophy of Religion	4
PHL-213	Asian Philosophy	4
PHL-216	Ancient Philosophy	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-204	History of Christianity	4
R-210	World Religions	4
R-211	History of the Old Testament	4
R-212	History of the New Testament	4
SPN-201	Second-Year Spanish I	4
SPN-202	Second-Year Spanish II	4
SPN-203	Second-Year Spanish III	4
SSC-237	Perspectives on Democracy and Dialogue	4
TA-101	Appreciation of Theatre	4
TA-102	Appreciation of Theatre	4
TA-103	Appreciation of Theatre	4
TA-111	Fundamentals of Technical Theatre	4
TA-122	Costuming II	3
TA-123	Costuming III	3
TA-141	Acting I	4
TA-142	Acting II	4
TA-143	Acting III	4
TA-153	Theatre Rehearsal & Performance	1-3

Code	Title	Credits
WR-240	Creative Nonfiction Writing I	4
WR-241	Fiction Writing I	4
WR-242	Poetry Writing I	4
WR-243	Playwriting I	4
WR-244	Fiction Writing II	4
WR-245	Poetry Writing II	4
WR-247	Playwriting II	4
WR-248	Bookmaking: Design and Layout	4
WR-262	Introduction to Screenwriting	4
WR-263	Screenwriting II	4
WR-265	Digital Storytelling	4
WR-270	Creative Nonfiction Writing II: Food Writing	4
WS-101	Introduction to Women's Studies	4

## Social Science

- 4 Courses from 2 or more disciplines
- Each course must be at least 3 credits

### Social Science Course List

Code	Title	Credits
HST-201	History of the United States	4
or HST-202	History of the United States	
or HST-203	History of the United States	
<i>AND</i>		
ANT-103	Cultural Anthropology	4
or GEO-110	Cultural & Human Geography	
<i>AND</i>		
PS-201	American Government and Politics	4
<i>AND</i>		
PSY-200	Introduction to Psychology: Part 1	4
or PSY-205	Introduction to Psychology: Part 2	
or PSY-215	Introduction to Developmental Psychology	

## Science/Math/Computer Science

- 3 Courses
- Each course must be at least 4 credits

### Science/Math/Computer Science Course List

Code	Title	Credits
BI-101	General Biology; Cellular Biology	0-4
or BI-102	General Biology; Animal Systems	
or BI-103	General Biology; Plants & The Ecosystem	
<i>AND</i>		
G-101	General Geology	4
or G-102	General Geology	
or G-103	General Geology	
<i>AND</i>		
GS-104	Earth System Science	4
or GS-105	Earth System Science	
or GS-106	Earth System Science	
OR any of the following AAOT science lab courses		
ASC-175	Integrated Science Inquiry	4

Code	Title	Credits
ASC-176	Integrated Science Inquiry	4
ASC-177	Integrated Science Inquiry	4
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-112	General Biology for Health Sciences	4
BI-160L	Bird Identification & Taxonomy with Lab	4
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-165D	Natural History of the Western Deserts	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-231	Human Anatomy & Physiology I	4
BI-232	Human Anatomy & Physiology II	4
BI-233	Human Anatomy & Physiology III	4
BI-234	Introductory Microbiology	4
CH-104	Introductory Chemistry	5
CH-105	Introductory Chemistry	5
CH-106	Introductory Chemistry	5
CH-112	Chemistry for Health Sciences	4
CH-114	Chemistry in Art	4
CH-221	General Chemistry	5
CH-222	General Chemistry	5
CH-223	General Chemistry	5
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
G-101	General Geology	4
G-102	General Geology	4
G-103	General Geology	4
G-148	Volcanoes & Earthquakes	4
G-201	General Geology	4
G-202	General Geology	4
G-203	General Geology	4
GS-104	Earth System Science	4
GS-105	Earth System Science	4
GS-106	Earth System Science	4
GS-107	Astronomy	4
PH-121	Astronomy	4
PH-122	General Astronomy	4
PH-123	General Astronomy	4
PH-201	General Physics	5
PH-202	General Physics	5
PH-203	General Physics	5
PH-211	General Physics With Calculus	5

Code	Title	Credits
PH-212	General Physics With Calculus	5
PH-213	General Physics With Calculus	5
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## Cultural Literacy

• 1 course

### Cultural Literacy Course List

Code	Title	Credits
ANT-103	Cultural Anthropology	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ASL-201	Second-Year American Sign Language I	4
ASL-202	Second-Year American Sign Language II	4
ASL-203	Second-Year American Sign Language III	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-213	U.S. Latinx Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-243	African Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-261	Literature of Science Fiction	4
ENG-271	World Literature: Ancient Through Classical Times	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4
ENG-273	World Literature: the 19th Through 21st Centuries	4
ENG-295	Revolutionary Film	4
FR-201	Second-Year French I	4
FR-202	Second-Year French II	4
FR-203	Second-Year French III	4
GEO-110	Cultural & Human Geography	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
HUM-235	Perspectives on Terrorism	4
HUM-237	Perspectives on Democracy and Dialogue	4
HUM-240	American Military Conflict: Wars of National Identity	4
HUM-241	American Military Conflict: Global War	4

Code	Title	Credits
HUM-242	American Military Conflict: Asymmetric Warfare	4
MUS-206	Music Literature: History of Rock	4
PHL-101	Philosophical Problems	4
PHL-102	Ethics	4
PHL-103	Critical Reasoning	4
PHL-205	Moral Issues	4
PHL-210	Philosophy of Religion	4
PHL-213	Asian Philosophy	4
PHL-216	Ancient Philosophy	4
PSY-205	Introduction to Psychology: Part 2	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-204	History of Christianity	4
R-210	World Religions	4
R-211	History of the Old Testament	4
R-212	History of the New Testament	4
SPN-201	Second-Year Spanish I	4
SPN-202	Second-Year Spanish II	4
SPN-203	Second-Year Spanish III	4
SSC-237	Perspectives on Democracy and Dialogue	4
WR-241	Fiction Writing I	4
WR-244	Fiction Writing II	4
WS-101	Introduction to Women's Studies	4

## Notes

- All courses must be passed with a C or better
- No course may be used to satisfy more than one requirement or distribution area

## Other Requirements

### Elementary Education Specific Requirements

- 5 courses
- Each public university will accept at least 3 out of the 5 courses as meeting major requirements. One of those 3 must be ED-216 Foundations of Teaching & Education

### Elementary Education Specific Requirements Course List

Code	Title	Credits
ED-169	Overview of Students With Special Needs	3
ED-216	Foundations of Teaching & Education	4
ED-229	Learning & Development	3
ED-258	Multicultural Education	3
ED-101 or ED-280	Intro to Education Practicum & Seminar Practicum/CWE	3

### Elective Courses

- Recommended: ED-150 Creative Activities for Children or [ECE \(p. 270\)](#) courses
- Any college-level course that would bring total credits to 90 credits
- Other courses numbered 100 or above may be used in this area, which may include up to 12 credits of career technical courses
- Please refer to the [Elective Course List \(p. 234\)](#) for courses that may be included

# ASSOCIATE OF SCIENCE OREGON TRANSFER (ASOT)

An ASOT degree is a two-year degree designed for the student intending to transfer to a four-year college or public university in Oregon and pursuing upper division baccalaureate courses in either Business or Computer Science. CCC students who have earned an ASOT degree and have met the transfer institution's lower-division general education degree requirements will be eligible for junior standing for the purposes of registration.

CCC offers a [Business ASOT \(p. 56\)](#) and [Computer Science ASOT \(p. 61\)](#)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

#### Arts & Letters <sup>1</sup>

- Interpret and engage in the Arts & Letters, making use of the creative process to enrich the quality of life and
- Critically analyze values and ethics within a range of human experience and expression to engage more fully in local and global issues.

#### Cultural Literacy

- Identify and analyze complex practices, values, and beliefs and the culturally and historically defined meanings of difference.

#### Mathematics

- Use appropriate mathematics to solve problems and
- Recognize which mathematical concepts are applicable to a scenario, apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results.

#### Science or Computer Science

- Gather, comprehend, and communicate scientific and technical information in order to explore ideas, models, and solutions and generate further questions
- Apply scientific and technical modes of inquiry, individually, and collaboratively, to critically evaluate existing or alternative explanations, solve problems, and make evidence-based decisions in an ethical manner and
- Assess the strengths and weaknesses of scientific studies and critically examine the influence of scientific and technical knowledge on human society and the environment.

#### Social Science

- Apply analytical skills to social phenomena in order to understand human behavior and
- Apply knowledge and experience to foster personal growth and better appreciate the diverse social world in which we live.

#### Speech/Oral Communication

- Engage in ethical communication processes that accomplish goals
- Respond to the needs of diverse audiences and contexts and
- Build and manage relationships.

#### Writing

- Read actively, think critically, and write purposefully and capably for academic and, in some cases, professional audiences
- Locate, evaluate, and ethically utilize information to communicate effectively and
- Demonstrate appropriate reasoning in response to complex issues.

#### Information Literacy <sup>2</sup>

- Formulate a problem statement
- Determine the nature and extent of the information needed to address the problem
- Access relevant information effectively and efficiency
- Evaluate information and its source critically and
- Understand many of the economic, legal, and social issues surrounding the use of information.

ASOT students will also be able to:

- Understand and apply micro- and macroeconomic theories and models to individual, group, and societal behavior and choices
- Recognize and apply business statistical methods and explain how they affect business decision making
- Prepare letters, reports and memos related to business topics using technology.

<sup>1</sup> Arts & Letters refers to works of art, whether written, crafted, designed, or performed and documents of historical or cultural significance.

<sup>2</sup> Information Literacy outcomes and criteria will be embedded in the Writing Foundational Requirements courses. At Clackamas, WR-121Z Composition I and WR-122Z Composition II meet that requirement.

## Business (ASOT)

**Program Code: AS.OTBUSINESS**

The ASOT - Business degree is a two-year degree designed for the student intending to transfer to a four-year college or public university in Oregon and pursuing upper division baccalaureate courses in Business. CCC students who have earned the ASOT - Business degree and have met the transfer institution's lower-division general education degree requirements will be eligible for junior standing for the purposes of registration.

### Outcomes

#### Program Outcomes

Upon successful completion of this program, students should be able to:

- understand and apply micro- and macroeconomic theories and models to individual, group, and societal behavior and choices;
- recognize and apply business statistical methods and explain how they affect business decision making;



- prepare letters, reports, and memos related to business topics using technology.

## Requirements

Complete 90 credits from the following:

## Foundational Skills

### Writing

- 8 Credits
- Information literacy will be included in the Writing Requirement

Code	Title	Credits
WR-121Z	Composition I	4
WR-122Z	Composition II	4
or WR-227Z	Technical Writing	

### Oral Communication

- 1 Course

Code	Title	Credits
COMM-111Z	Public Speaking	4

### Mathematics

- Minimum of 3 courses, including 4 credits of statistics

Code	Title	Credits
MTH-111Z	Precalculus I: Functions	4
Higher Level Math or Statistics		
STAT-243Z	Elementary Statistics I	4
MTH-244	Statistics II	4

## General Education Distribution Areas

### Arts & Letters

- 3 courses from 2 or more disciplines
- Each course must be at least 3 credits

#### Arts & Letters Course List

Code	Title	Credits
ART-101	Art Appreciation	3
ART-115	Basic Design: 2-Dimensional Design	4
ART-117	Basic Design: 3-Dimensional Composition	4
ART-131	Introduction to Drawing	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ART-232	Life Drawing (Figure Emphasis)	4
ART-233	Drawing for Comics	4
ART-250	Ceramics/Beginning	4
ART-251	Ceramics/Hand-Building I	4
ART-252	Ceramics/Wheel-Throwing I	4
ART-253	Ceramics/Intermediate	4
ART-254	Ceramics/Hand-Building II	4
ART-255	Ceramics/Wheel-Throwing II	4
ART-257	Metalsmithing/Jewelry	4

Code	Title	Credits
ART-281	Painting: Still Life/Beginning	4
ART-282	Painting: The Figure/Beginning	4
ART-283	Painting: Landscapes/Beginning	4
ART-284	Painting: Still Life/Intermediate	4
ART-285	Painting: The Figure/Intermediate	4
ART-286	Painting: Landscapes/Intermediate	4
ART-291	Sculpture	4
ART-292	Sculpture (Figure Emphasis)	4
ART-293	Sculpture (Metal Emphasis)	4
ASL-201	Second-Year American Sign Language I	4
ASL-202	Second-Year American Sign Language II	4
ASL-203	Second-Year American Sign Language III	4
COMM-112	Persuasive Speaking	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-212	Mass Media & Society	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
COMM-227	Nonverbal Communication	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-116	Introduction to Literature: Comics	4
ENG-121	Mystery Fiction	4
ENG-130	Leadership in Literature	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-218	Arthurian Literature	4
ENG-226	Popular Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-243	African Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-261	Literature of Science Fiction	4
ENG-270	Introduction to Literary Criticism	4
ENG-271	World Literature: Ancient Through Classical Times	4

Code	Title	Credits
ENG-272	World Literature: Early Middle Ages through the 18th Century	4
ENG-273	World Literature: the 19th Through 21st Centuries	4
ENG-295	Revolutionary Film	4
ENG-296	Adaptation: Literature Into Film	4
FR-201	Second-Year French I	4
FR-202	Second-Year French II	4
FR-203	Second-Year French III	4
HUM-235	Perspectives on Terrorism	4
HUM-237	Perspectives on Democracy and Dialogue	4
HUM-240	American Military Conflict: Wars of National Identity	4
HUM-241	American Military Conflict: Global War	4
HUM-242	American Military Conflict: Asymmetric Warfare	4
J-211	Mass Media & Society	4
J-216	Writing for Media	4
MUS-105	Music Appreciation	3
MUS-111	Music Theory I	3
MUS-112	Music Theory I	3
MUS-113	Music Theory I	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-211	Music Theory II	3
MUS-212	Music Theory II	3
MUS-213	Music Theory II	3
PHL-101	Philosophical Problems	4
PHL-102	Ethics	4
PHL-103	Critical Reasoning	4
PHL-205	Moral Issues	4
PHL-210	Philosophy of Religion	4
PHL-213	Asian Philosophy	4
PHL-216	Ancient Philosophy	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-204	History of Christianity	4
R-210	World Religions	4
R-211	History of the Old Testament	4
R-212	History of the New Testament	4
SPN-201	Second-Year Spanish I	4
SPN-202	Second-Year Spanish II	4
SPN-203	Second-Year Spanish III	4
SSC-237	Perspectives on Democracy and Dialogue	4
TA-101	Appreciation of Theatre	4
TA-102	Appreciation of Theatre	4
TA-103	Appreciation of Theatre	4
TA-111	Fundamentals of Technical Theatre	4
TA-122	Costuming II	3
TA-123	Costuming III	3
TA-141	Acting I	4
TA-142	Acting II	4

Code	Title	Credits
TA-143	Acting III	4
TA-153	Theatre Rehearsal & Performance	1-3
WR-240	Creative Nonfiction Writing I	4
WR-241	Fiction Writing I	4
WR-242	Poetry Writing I	4
WR-243	Playwriting I	4
WR-244	Fiction Writing II	4
WR-245	Poetry Writing II	4
WR-247	Playwriting II	4
WR-248	Bookmaking: Design and Layout	4
WR-262	Introduction to Screenwriting	4
WR-263	Screenwriting II	4
WR-265	Digital Storytelling	4
WR-270	Creative Nonfiction Writing II: Food Writing	4
WS-101	Introduction to Women's Studies	4

## Social Science

- 4 courses from 2 or more disciplines, including EC-201 Principles of Economics: Micro and EC-202 Principles of Economics: Macro completed with a grade of C- or better
- Each course must be at least 3 credits

### Social Science Course List

Code	Title	Credits
ANT-101	Physical Anthropology	4
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
CJA-101	Criminology	4
CJA-201	Juvenile Delinquency	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HE-164	Body & Drugs II: Alcohol	3
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-130	Oddballs and Outcasts in Western Civilization	4
HST-131	History of Crime & Punishment in Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4
HST-138	History of Love, Marriage and the Family In Western Civilization	4
HST-201	History of the United States	4

Code	Title	Credits
HST-202	History of the United States	4
HST-203	History of the United States	4
HUM-237	Perspectives on Democracy and Dialogue	4
PS-200	Introduction to Political Science	4
PS-201	American Government and Politics	4
PS-203	State and Local Governments	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PS-297	Introduction to Environmental Politics	4
PSY-200	Introduction to Psychology: Part 1	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-215	Introduction to Developmental Psychology	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4
SOC-210	Marriage, Family, & Intimate Relations	4
SOC-225	Social Problems	4
SSC-235	Perspectives on Terrorism	4
SSC-237	Perspectives on Democracy and Dialogue	4
SSC-240	American Military Conflict: Wars of National Identity	4
SSC-241	American Military Conflict: Global War	4
SSC-242	American Military Conflict: Asymmetric Warfare	4
WS-101	Introduction to Women's Studies	4

## Science

- 4 courses from at least 2 disciplines including at least 3 laboratory courses in biological and/or physical science
- Minimum of 12 credits of laboratory science required
- Each course must be at least 3 credits

### Science Course List

Code	Title	Credits
ASC-175	Integrated Science Inquiry	4
ASC-176	Integrated Science Inquiry	4
ASC-177	Integrated Science Inquiry	4
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-112	General Biology for Health Sciences	4
BI-160	Bird Identification & Taxonomy	3
BI-160L	Bird Identification & Taxonomy with Lab	4
BI-165C	Natural History of the Oregon Coast	3
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-165D	Natural History of the Western Deserts	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4

Code	Title	Credits
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-231	Human Anatomy & Physiology I	4
BI-232	Human Anatomy & Physiology II	4
BI-233	Human Anatomy & Physiology III	4
BI-234	Introductory Microbiology	4
CH-104	Introductory Chemistry	5
CH-105	Introductory Chemistry	5
CH-106	Introductory Chemistry	5
CH-112	Chemistry for Health Sciences	4
CH-114	Chemistry in Art	4
CH-221	General Chemistry	5
CH-222	General Chemistry	5
CH-223	General Chemistry	5
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
G-101	General Geology	4
G-102	General Geology	4
G-103	General Geology	4
G-148	Volcanoes & Earthquakes	4
G-201	General Geology	4
G-202	General Geology	4
G-203	General Geology	4
GS-104	Earth System Science	4
GS-105	Earth System Science	4
GS-106	Earth System Science	4
GS-107	Astronomy	4
PH-121	Astronomy	4
PH-122	General Astronomy	4
PH-123	General Astronomy	4
PH-201	General Physics	5
PH-202	General Physics	5
PH-203	General Physics	5
PH-211	General Physics With Calculus	5
PH-212	General Physics With Calculus	5
PH-213	General Physics With Calculus	5
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## CULTURAL LITERACY

- 1 Course
- Each course must be at least 3 credits

## Cultural Literacy Course List

Code	Title	Credits
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ASL-201	Second-Year American Sign Language I	4
ASL-202	Second-Year American Sign Language II	4
ASL-203	Second-Year American Sign Language III	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-213	U.S. Latinx Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-243	African Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-261	Literature of Science Fiction	4
ENG-271	World Literature: Ancient Through Classical Times	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4
ENG-273	World Literature: the 19th Through 21st Centuries	4
ENG-295	Revolutionary Film	4
FR-201	Second-Year French I	4
FR-202	Second-Year French II	4
FR-203	Second-Year French III	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-130	Oddballs and Outcasts in Western Civilization	4
HST-131	History of Crime & Punishment in Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4

Code	Title	Credits
HST-138	History of Love, Marriage and the Family In Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
HUM-235	Perspectives on Terrorism	4
HUM-237	Perspectives on Democracy and Dialogue	4
HUM-240	American Military Conflict: Wars of National Identity	4
HUM-241	American Military Conflict: Global War	4
HUM-242	American Military Conflict: Asymmetric Warfare	4
MUS-206	Music Literature: History of Rock	4
PHL-101	Philosophical Problems	4
PHL-102	Ethics	4
PHL-103	Critical Reasoning	4
PHL-205	Moral Issues	4
PHL-210	Philosophy of Religion	4
PHL-213	Asian Philosophy	4
PHL-216	Ancient Philosophy	4
PS-200	Introduction to Political Science	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-204	History of Christianity	4
R-210	World Religions	4
R-211	History of the Old Testament	4
R-212	History of the New Testament	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4
SOC-210	Marriage, Family, & Intimate Relations	4
SOC-225	Social Problems	4
SPN-201	Second-Year Spanish I	4
SPN-202	Second-Year Spanish II	4
SPN-203	Second-Year Spanish III	4
SSC-235	Perspectives on Terrorism	4
SSC-237	Perspectives on Democracy and Dialogue	4
SSC-240	American Military Conflict: Wars of National Identity	4
SSC-241	American Military Conflict: Global War	4
SSC-242	American Military Conflict: Asymmetric Warfare	4
WR-241	Fiction Writing I	4
WR-244	Fiction Writing II	4
WS-101	Introduction to Women's Studies	4

## Other Requirements

### Business Specific Requirements

- Minimum 20 credits

## Business Specific Requirements Course List

Code	Title	Credits
BA-101	Introduction to Business	4
BA-131	Introduction to Business Computing	4
BA-211	Financial Accounting	4
BA-213	Decision Making With Accounting Information	4
BA-226	Business Law I	4

## Elective and/or University Specific Requirements

- Determined by choice of transfer institution. Please contact your transfer advisor for assistance
- Any college-level course that would bring total credits to 90 credits
- Other courses numbered 100 or above may be used in this area, which may include up to 12 credits of career technical courses
- Please refer to the [Elective Course List \(p. 234\)](#) for courses that may be included

## Notes

- All courses must be passed with a C or better
- No course may be used to satisfy more than one requirement or distribution area

## Computer Science (ASOT)

Program Code: AS.OTCOMPSCIENCE

The ASOT - Computer Science degree is a two year degree designed for the student intending to transfer to a four-year college or public university in Oregon and pursuing upper division baccalaureate courses in Computer Science. CCC students who have earned the ASOT - Computer Science degree and have met the transfer institution's lower-division general education degree requirements will be eligible for junior standing for the purposes of registration.

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- gather, comprehend, and communicate scientific and technical information in order to explore ideas, models, and solutions and generate further questions;
- apply scientific and technical modes of inquiry, individually, and collaboratively, to critically evaluate existing or alternative explanations, solve problems, and make evidence-based decisions in an ethical manner;
- assess the strengths and weaknesses of scientific studies and critically examine the influence of scientific and technical knowledge on human society and the environment.

## Requirements

Complete 90 credits from the following:

## Foundational Skills

### Writing

- 8 Credits

Code	Title	Credits
WR-121Z	Composition I	4
WR-122Z or WR-227Z	Composition II Technical Writing	4

## Oral Communication

- 1 Course

Code	Title	Credits
COMM-111Z	Public Speaking	4

## Mathematics

- 2 Courses

Code	Title	Credits
MTH-251	Calculus I	5
MTH-252	Calculus II	5

## Health & Physical Education

- At Least 3 credits

Code	Title	Credits
HE-201	Personal Training	3
HE-202	Introduction to Fitness Technology Careers	1
HE-204	Nutrition & Weight Control	3
HE-207	Introduction to Plant Based Living	3
HE-223	Sports Nutrition	3
HE-249	Mental Health	3
HE-250	Personal Health	3
HE-252	First Aid/CPR/AED	3
HE-261	Community CPR	1
HPE-295	Health & Fitness for Life	3
PE-185	Physical Education	1
PE-194	Professional Activities	1
PE-240	Strength & Conditioning Theory & Techniques	3
PE-260	Care and Prevention of Athletic Injuries	2
PE-270	Sport and Exercise Psychology	3
PE-294	Professional Activities	1
PE-294A	Philosophy of Coaching	2



## General Education Distribution Areas

### Arts & Letters

- 3 courses from 2 or more disciplines
- Each course must be at least 3 credits

#### Arts & Letters Course List

Code	Title	Credits
ART-101	Art Appreciation	3
ART-115	Basic Design: 2-Dimensional Design	4
ART-117	Basic Design: 3-Dimensional Composition	4
ART-131	Introduction to Drawing	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ART-232	Life Drawing (Figure Emphasis)	4
ART-233	Drawing for Comics	4
ART-250	Ceramics/Beginning	4
ART-251	Ceramics/Hand-Building I	4
ART-252	Ceramics/Wheel-Throwing I	4
ART-253	Ceramics/Intermediate	4
ART-254	Ceramics/Hand-Building II	4
ART-255	Ceramics/Wheel-Throwing II	4
ART-257	Metalsmithing/Jewelry	4
ART-281	Painting: Still Life/Beginning	4
ART-282	Painting: The Figure/Beginning	4
ART-283	Painting: Landscapes/Beginning	4
ART-284	Painting: Still Life/Intermediate	4
ART-285	Painting: The Figure/Intermediate	4
ART-286	Painting: Landscapes/Intermediate	4
ART-291	Sculpture	4
ART-292	Sculpture (Figure Emphasis)	4
ART-293	Sculpture (Metal Emphasis)	4
ASL-201	Second-Year American Sign Language I	4
ASL-202	Second-Year American Sign Language II	4
ASL-203	Second-Year American Sign Language III	4
COMM-112	Persuasive Speaking	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-212	Mass Media & Society	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
COMM-227	Nonverbal Communication	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-116	Introduction to Literature: Comics	4
ENG-121	Mystery Fiction	4
ENG-130	Leadership in Literature	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-218	Arthurian Literature	4
ENG-226	Popular Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-243	African Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-261	Literature of Science Fiction	4
ENG-270	Introduction to Literary Criticism	4
ENG-271	World Literature: Ancient Through Classical Times	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4
ENG-273	World Literature: the 19th Through 21st Centuries	4
ENG-295	Revolutionary Film	4
ENG-296	Adaptation: Literature Into Film	4
FR-201	Second-Year French I	4
FR-202	Second-Year French II	4
FR-203	Second-Year French III	4
HUM-235	Perspectives on Terrorism	4
HUM-237	Perspectives on Democracy and Dialogue	4
HUM-240	American Military Conflict: Wars of National Identity	4
HUM-241	American Military Conflict: Global War	4
HUM-242	American Military Conflict: Asymmetric Warfare	4
J-211	Mass Media & Society	4
J-216	Writing for Media	4
MUS-105	Music Appreciation	3
MUS-111	Music Theory I	3
MUS-112	Music Theory I	3
MUS-113	Music Theory I	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-211	Music Theory II	3
MUS-212	Music Theory II	3
MUS-213	Music Theory II	3
PHL-101	Philosophical Problems	4
PHL-102	Ethics	4
PHL-103	Critical Reasoning	4

Code	Title	Credits	Code	Title	Credits
PHL-205	Moral Issues	4	EC-202	Principles of Economics: Macro	4
PHL-210	Philosophy of Religion	4	GEO-100	Introduction to Physical Geography	4
PHL-213	Asian Philosophy	4	GEO-110	Cultural & Human Geography	4
PHL-216	Ancient Philosophy	4	GEO-130	Introduction to Environmental Geography	4
R-101	Judaism and Foundations of Religion	4	GEO-208	Geography of the United States & Canada	4
R-102	Christianity and Islam	4	HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
R-103	Asian Religions	4	HE-164	Body & Drugs II: Alcohol	3
R-204	History of Christianity	4	HST-101	History of Western Civilization	4
R-210	World Religions	4	HST-102	History of Western Civilization	4
R-211	History of the Old Testament	4	HST-103	History of Western Civilization	4
R-212	History of the New Testament	4	HST-130	Oddballs and Outcasts in Western Civilization	4
SPN-201	Second-Year Spanish I	4	HST-131	History of Crime & Punishment in Western Civilization	4
SPN-202	Second-Year Spanish II	4	HST-132	History of Language and the Written Word in Western Civilization	4
SPN-203	Second-Year Spanish III	4	HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
SSC-237	Perspectives on Democracy and Dialogue	4	HST-137	History of Science, Medicine, & Technology in Western Civilization	4
TA-101	Appreciation of Theatre	4	HST-138	History of Love, Marriage and the Family In Western Civilization	4
TA-102	Appreciation of Theatre	4	HST-201	History of the United States	4
TA-103	Appreciation of Theatre	4	HST-202	History of the United States	4
TA-111	Fundamentals of Technical Theatre	4	HST-203	History of the United States	4
TA-122	Costuming II	3	HUM-237	Perspectives on Democracy and Dialogue	4
TA-123	Costuming III	3	PS-200	Introduction to Political Science	4
TA-141	Acting I	4	PS-201	American Government and Politics	4
TA-142	Acting II	4	PS-203	State and Local Governments	4
TA-143	Acting III	4	PS-204	Introduction to Comparative Politics	4
TA-153	Theatre Rehearsal & Performance	1-3	PS-205	International Relations	4
WR-240	Creative Nonfiction Writing I	4	PS-225	Introduction to Political Ideologies	4
WR-241	Fiction Writing I	4	PS-297	Introduction to Environmental Politics	4
WR-242	Poetry Writing I	4	PSY-200	Introduction to Psychology: Part 1	4
WR-243	Playwriting I	4	PSY-205	Introduction to Psychology: Part 2	4
WR-244	Fiction Writing II	4	PSY-215	Introduction to Developmental Psychology	4
WR-245	Poetry Writing II	4	PSY-219	Introduction to Abnormal Psychology	4
WR-247	Playwriting II	4	PSY-231	Introduction to Human Sexuality	4
WR-248	Bookmaking: Design and Layout	4	SOC-204	Introduction to Sociology	4
WR-262	Introduction to Screenwriting	4	SOC-205	Social Stratification & Social Systems	4
WR-263	Screenwriting II	4	SOC-206	Institutions & Social Change	4
WR-265	Digital Storytelling	4	SOC-210	Marriage, Family, & Intimate Relations	4
WR-270	Creative Nonfiction Writing II: Food Writing	4	SOC-225	Social Problems	4
WS-101	Introduction to Women's Studies	4	SSC-235	Perspectives on Terrorism	4
			SSC-237	Perspectives on Democracy and Dialogue	4
			SSC-240	American Military Conflict: Wars of National Identity	4
			SSC-241	American Military Conflict: Global War	4
			SSC-242	American Military Conflict: Asymmetric Warfare	4
			WS-101	Introduction to Women's Studies	4

## Social Science

- 4 courses from 2 or more disciplines
- Each course must be at least 3 credits

### Social Science Course List

Code	Title	Credits
ANT-101	Physical Anthropology	4
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
CJA-101	Criminology	4
CJA-201	Juvenile Delinquency	4
EC-201	Principles of Economics: Micro	4

## Science/Math/Computer Science

- 4 courses from at least 2 disciplines, including at least 3 laboratory courses in biological and/or physical science
- Each course must be at least 3 credits

### Science/Math/Computer Science Course List

Code	Title	Credits
ASC-175	Integrated Science Inquiry	4
ASC-176	Integrated Science Inquiry	4
ASC-177	Integrated Science Inquiry	4
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-112	General Biology for Health Sciences	4
BI-160	Bird Identification & Taxonomy	3
BI-160L	Bird Identification & Taxonomy with Lab	4
BI-165C	Natural History of the Oregon Coast	3
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-165D	Natural History of the Western Deserts	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-231	Human Anatomy & Physiology I	4
BI-232	Human Anatomy & Physiology II	4
BI-233	Human Anatomy & Physiology III	4
BI-234	Introductory Microbiology	4
CH-104	Introductory Chemistry	5
CH-105	Introductory Chemistry	5
CH-106	Introductory Chemistry	5
CH-112	Chemistry for Health Sciences	4
CH-114	Chemistry in Art	4
CH-221	General Chemistry	5
CH-222	General Chemistry	5
CH-223	General Chemistry	5
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
G-101	General Geology	4
G-102	General Geology	4
G-103	General Geology	4
G-148	Volcanoes & Earthquakes	4
G-201	General Geology	4
G-202	General Geology	4
G-203	General Geology	4
GS-104	Earth System Science	4
GS-105	Earth System Science	4

Code	Title	Credits
GS-106	Earth System Science	4
GS-107	Astronomy	4
MTH-105Z	Math in Society	4
MTH-111Z	Precalculus I: Functions	4
MTH-112Z	Precalculus II: Trigonometry	4
MTH-211	Fundamentals of Elementary Math I	4
MTH-212	Fundamentals of Elementary Math II	4
MTH-213	Fundamentals of Elementary Math III	4
MTH-244	Statistics II	4
MTH-251	Calculus I	5
MTH-252	Calculus II	5
MTH-253	Calculus III	5
MTH-254	Vector Calculus	5
MTH-256	Differential Equations	4
MTH-261	Linear Algebra	4
PH-121	Astronomy	4
PH-122	General Astronomy	4
PH-123	General Astronomy	4
PH-201	General Physics	5
PH-202	General Physics	5
PH-203	General Physics	5
PH-211	General Physics With Calculus	5
PH-212	General Physics With Calculus	5
PH-213	General Physics With Calculus	5
STAT-243Z	Elementary Statistics I	4
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## Cultural Literacy

- 1 Course
- Each course must be at least 3 credits

### Cultural Literacy Course List

Code	Title	Credits
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ASL-201	Second-Year American Sign Language I	4
ASL-202	Second-Year American Sign Language II	4
ASL-203	Second-Year American Sign Language III	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4

Code	Title	Credits
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-213	U.S. Latinx Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-243	African Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-261	Literature of Science Fiction	4
ENG-271	World Literature: Ancient Through Classical Times	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4
ENG-273	World Literature: the 19th Through 21st Centuries	4
ENG-295	Revolutionary Film	4
FR-201	Second-Year French I	4
FR-202	Second-Year French II	4
FR-203	Second-Year French III	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-130	Oddballs and Outcasts in Western Civilization	4
HST-131	History of Crime & Punishment in Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4
HST-138	History of Love, Marriage and the Family In Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
HUM-235	Perspectives on Terrorism	4
HUM-237	Perspectives on Democracy and Dialogue	4
HUM-240	American Military Conflict: Wars of National Identity	4
HUM-241	American Military Conflict: Global War	4
HUM-242	American Military Conflict: Asymmetric Warfare	4
MUS-206	Music Literature: History of Rock	4
PHL-101	Philosophical Problems	4
PHL-102	Ethics	4
PHL-103	Critical Reasoning	4
PHL-205	Moral Issues	4
PHL-210	Philosophy of Religion	4
PHL-213	Asian Philosophy	4
PHL-216	Ancient Philosophy	4

Code	Title	Credits
PS-200	Introduction to Political Science	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-204	History of Christianity	4
R-210	World Religions	4
R-211	History of the Old Testament	4
R-212	History of the New Testament	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4
SOC-210	Marriage, Family, & Intimate Relations	4
SOC-225	Social Problems	4
SPN-201	Second-Year Spanish I	4
SPN-202	Second-Year Spanish II	4
SPN-203	Second-Year Spanish III	4
SSC-235	Perspectives on Terrorism	4
SSC-237	Perspectives on Democracy and Dialogue	4
SSC-240	American Military Conflict: Wars of National Identity	4
SSC-241	American Military Conflict: Global War	4
SSC-242	American Military Conflict: Asymmetric Warfare	4
WR-241	Fiction Writing I	4
WR-244	Fiction Writing II	4
WS-101	Introduction to Women's Studies	4

## Other Requirements

### Computer Science Specific Requirements

- Minimum of 16 credits
- Each course must be at least 3 credits

### Computer Science Specific Requirements Course List

Code	Title	Credits
CS-160	Computer Science Orientation	4
CS-161	Computer Science I	4
CS-162	Computer Science II	4
CS-260	Data Structures	4

### Elective and/or University Specific Requirements

- Determined by choice of transfer institution. Please contact your transfer advisor for assistance
- Any college-level course that would bring total credits to 90 credits
- Other courses numbered 100 or above may be used in this area, which may include up to 12 credits of career technical courses
- Please refer to the [Elective Course List \(p. 234\)](#) for courses that may be included

## Notes

- All courses must be passed with a C or better
- No course may be used to satisfy more than one requirement or distribution area



# ASSOCIATE OF ARTS TRANSFER DEGREE (AAT)

An Associate of Arts Transfer (AAT) Degree is a lower division major-specific undergraduate award issued by a community college that indicates satisfactory completion of a course of study that is intended to prepare students for transfer to a public university in Oregon and have junior standing in a specific Bachelor of Arts degree program. The classes, outcomes, and completion standards for the major-specific Associate Transfer degrees are defined by a statewide memorandum of understanding between participating community colleges and public universities. In majors where junior standing within 90 credits is not possible, students who complete an Associate of Arts Transfer degree will have equivalent status to students who started at a public university in the same major. Memoranda of understanding are approved by the Commission and will be published on the HECC website.

## Outcomes

The classes, outcomes and completion standards for the major specific Associate Transfer degrees are defined by a statewide memorandum of understanding between participating community colleges and public universities. In majors where junior standing within 90 credits is not possible, students who complete an Associate of Arts Transfer degree will have equivalent status to students who started at a public university in the same major. Memoranda of understanding are approved by the Commission and will be published on the [HECC website](#).

## English Literature (AAT)

**Program Code:** AA.ENGLIT

Where can a degree in English take you? The possible answers to that question lie in the skills that you gain through focusing on reading and writing, thinking and words. English majors graduate with the ability to analyze the words of others, think both critically and creatively, research ideas and argue important positions, and organize their own thoughts into effective and articulate forms from web content to grant applications, business proposals to novels. Because of these skills, the National Association of Colleges and Employers has ranked English as one of the top-paying liberal arts majors, with average starting salaries above \$50,000, and often rising much higher in the ten years after graduating.

The AAT in English Literature outlines specific course requirements for students at any Oregon community college who plan to transfer to a four-year public university and earn a Bachelor of Arts or Bachelor of Science in English literature. CCC's English department fosters a supportive cohort of English majors and has strong relationships with many transfer institutions across the state. Our faculty collaborate with academic advisors to help students choose courses that best prepare them for the specific program at their chosen four-year university.

For information contact Amanda Coffey, 503-594-3257 or [amandac@clackamas.edu](mailto:amandac@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate understanding of literary works in context, including the ways texts engage notions of genre, culture, history, class, race, gender, and sexuality;
- use a variety of written, verbal, and multimodal forms to respond to and analyze literary texts and contexts.

## Requirements

Complete 90 credits from the following:

## Foundational Skills

### Writing

- 2 courses
- Information literacy will be included in the Writing requirement

Code	Title	Credits
WR-121Z	Composition I	4
WR-122Z	Composition II	4

### Literature

- 2 courses
- At PSU up to 12 credits of 200-level English Literature can count towards the major

Code	Title	Credits
ENG-204	British Literature: Ancient to Enlightenment	4
or ENG-205	British Literature: Romantic to Contemporary	
or ENG-253	American Literature: Pre-Columbian to Civil War	
or ENG-254	American Literature: 1865 to Present	

AND

[Any 200-Level English Literature Course \(p. 278\)](#)

### Mathematics

- 1 course
- Not required at PSU for the BA; will count toward UNST placement

Code	Title	Credits
MTH-105Z	Math in Society	4
Higher Level Math or Statistics		

## General Education Distribution Areas

### Arts & Letters

- 2 courses, 200-level literature
- Each course must be at least 3 credits
- If students take American or British survey courses they will count towards major requirements at WOU
- At OSU these courses only count towards the major and students will need to take another Arts and Letters course
- At EOU, SOU, UO & PSU these courses also count toward major requirements (at PSU up to 12 credits of 200-level English Literature can count towards the major)

### Arts & Letters Course List

Code	Title	Credits
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4

Code	Title	Credits
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-218	Arthurian Literature	4
ENG-226	Popular Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-243	African Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-261	Literature of Science Fiction	4
ENG-270	Introduction to Literary Criticism	4
ENG-271	World Literature: Ancient Through Classical Times	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4
ENG-273	World Literature: the 19th Through 21st Centuries	4
ENG-295	Revolutionary Film	4
ENG-296	Adaptation: Literature Into Film	4

## Social Science

- 2 courses
- Each course must be at least 3 credits

### Social Science Course List

Code	Title	Credits
ANT-101	Physical Anthropology	4
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
CJA-101	Criminology	4
CJA-201	Juvenile Delinquency	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HE-164	Body & Drugs II: Alcohol	3
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-130	Oddballs and Outcasts in Western Civilization	4
HST-131	History of Crime & Punishment in Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4

Code	Title	Credits
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4
HST-138	History of Love, Marriage and the Family In Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
HUM-237	Perspectives on Democracy and Dialogue	4
PS-200	Introduction to Political Science	4
PS-201	American Government and Politics	4
PS-203	State and Local Governments	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PS-297	Introduction to Environmental Politics	4
PSY-200	Introduction to Psychology: Part 1	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-215	Introduction to Developmental Psychology	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4
SOC-210	Marriage, Family, & Intimate Relations	4
SOC-225	Social Problems	4
SSC-235	Perspectives on Terrorism	4
SSC-237	Perspectives on Democracy and Dialogue	4
SSC-240	American Military Conflict: Wars of National Identity	4
SSC-241	American Military Conflict: Global War	4
SSC-242	American Military Conflict: Asymmetric Warfare	4
WS-101	Introduction to Women's Studies	4

## Natural Science

- 2 lab science courses
- Each course must be at least 4 credits
- At PSU the second Natural Lab Science course counts towards UNST placement

### Natural Science Course List

Code	Title	Credits
ASC-175	Integrated Science Inquiry	4
ASC-176	Integrated Science Inquiry	4
ASC-177	Integrated Science Inquiry	4
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-112	General Biology for Health Sciences	4
BI-160L	Bird Identification & Taxonomy with Lab	4
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-165D	Natural History of the Western Deserts	4

Code	Title	Credits
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-231	Human Anatomy & Physiology I	4
BI-232	Human Anatomy & Physiology II	4
BI-233	Human Anatomy & Physiology III	4
BI-234	Introductory Microbiology	4
CH-104	Introductory Chemistry	5
CH-105	Introductory Chemistry	5
CH-106	Introductory Chemistry	5
CH-112	Chemistry for Health Sciences	4
CH-114	Chemistry in Art	4
CH-221	General Chemistry	5
CH-222	General Chemistry	5
CH-223	General Chemistry	5
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
G-101	General Geology	4
G-102	General Geology	4
G-103	General Geology	4
G-148	Volcanoes & Earthquakes	4
G-201	General Geology	4
G-202	General Geology	4
G-203	General Geology	4
GS-104	Earth System Science	4
GS-105	Earth System Science	4
GS-106	Earth System Science	4
GS-107	Astronomy	4
PH-121	Astronomy	4
PH-122	General Astronomy	4
PH-123	General Astronomy	4
PH-201	General Physics	5
PH-202	General Physics	5
PH-203	General Physics	5
PH-211	General Physics With Calculus	5
PH-212	General Physics With Calculus	5
PH-213	General Physics With Calculus	5
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## Cultural Literacy

• 1 course

## Cultural Literacy Course List

Code	Title	Credits
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
ASL-203	Second-Year American Sign Language III	4
ENG-213	U.S. Latinx Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-243	African Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-261	Literature of Science Fiction	4
ENG-271	World Literature: Ancient Through Classical Times	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4
ENG-273	World Literature: the 19th Through 21st Centuries	4
ENG-295	Revolutionary Film	4
FR-203	Second-Year French III	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-130	Oddballs and Outcasts in Western Civilization	4
HST-131	History of Crime & Punishment in Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4
HST-138	History of Love, Marriage and the Family In Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
HUM-237	Perspectives on Democracy and Dialogue	4
PS-200	Introduction to Political Science	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4
SOC-210	Marriage, Family, & Intimate Relations	4
SOC-225	Social Problems	4
SPN-203	Second-Year Spanish III	4
SSC-235	Perspectives on Terrorism	4

Code	Title	Credits
SSC-237	Perspectives on Democracy and Dialogue	4
SSC-240	American Military Conflict: Wars of National Identity	4
SSC-241	American Military Conflict: Global War	4
SSC-242	American Military Conflict: Asymmetric Warfare	4
WR-241	Fiction Writing I	4
WR-244	Fiction Writing II	4
WS-101	Introduction to Women's Studies	4

## Other Requirements

### World Languages

- 1 course

#### World Languages Course List

Code	Title	Credits
ASL-203	Second-Year American Sign Language III	4
FR-203	Second-Year French III	4
SPN-203	Second-Year Spanish III	4

### Elective Courses

- Any college-level course that would bring total credits to 90 credits
- Other courses numbered 100 or above may be used in this area, which may include up to 12 credits of career technical courses
- Please refer to the [Elective Course List \(p. 234\)](#) for courses that may be included
- Students should take courses to satisfy their minor of choice that will transfer to the Oregon public university of their choice. Please work with an English Department Advisor to identify possible courses to satisfy a specific minor at a partnering institution

#### Recommended Elective Course List

Code	Title	Credits
COMM-111Z	Public Speaking	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-116	Introduction to Literature: Comics	4
ENG-121	Mystery Fiction	4
ENG-130	Leadership in Literature	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-230	Documentary Film	4
WR-140	Introduction to Writing Creatively	4
WR-240	Creative Nonfiction Writing I	4
WR-241	Fiction Writing I	4
WR-242	Poetry Writing I	4
WR-243	Playwriting I	4
WR-244	Fiction Writing II	4
WR-245	Poetry Writing II	4
WR-246	Editing & Publishing	4
WR-247	Playwriting II	4
WR-248	Bookmaking: Design and Layout	4
WR-250	Book Promotion	4

Code	Title	Credits
WR-262	Introduction to Screenwriting	4
WR-263	Screenwriting II	4
WR-265	Digital Storytelling	4
WR-268	Creative Nonfiction Writing II: Nature Writing	4
WR-270	Creative Nonfiction Writing II: Food Writing	4

or any [PHL \(p. 321\)](#), [MUS \(p. 308\)](#), [MUP \(p. 313\)](#), [TA \(p. 329\)](#), [HST \(p. 291\)](#), or additional [BI \(p. 253\)](#) or Physical Science courses

### Notes

- All courses must be passed with a C or better
- No course may be used to satisfy more than one requirement or distribution area

## Careers

The employment opportunities that accompany an English major are myriad. One obvious example is the field of publishing. But English majors rarely stop at the obvious. Their skills apply equally well to the fields of public relations, marketing, advertising, and copywriting. In a business setting, English majors often find success as communications managers, web developers, researchers, project leaders, or administrators. If you want your words to reach the lives of others, English might guide you to the areas of journalism, law, government, and public policy. For those who truly love filling a blank page, English can lead into creative writing, speech writing, professional blogging, or technical writing. And the careers of professional writer, librarian, and teacher are ideal if you find that your love of English is uncontainable and must be shared.

# ASSOCIATE OF SCIENCE TRANSFER DEGREE (AST)

An Associate of Science Transfer (AST) Degree is a lower division major-specific undergraduate award issued by a community college that indicates satisfactory completion of a course of study that is intended to prepare students for transfer to a public university in Oregon and have junior standing in a specific Bachelor of Science degree program. The classes, outcomes, and completion standards for the major-specific Associate Transfer degrees are defined by a statewide memorandum of understanding between participating community colleges and public universities. In majors where junior standing within 90 credits is not possible, students who complete an Associate of Science Transfer degree will have equivalent status to students who started at a public university in the same major. Memoranda of understanding are approved by the Commission and will be published on the HECC website.

## Biology (AST)

**Program Code:** AS.TBIOLOGY

Are you interested in better understanding how life works? Biology is the study of living and once-living organisms, and an understanding of biological principles can be applied to a wide range of fields such as bioinformatics, ecology, education, marine biology, medicine, molecular biology, veterinary medicine, and more. Biology majors develop critical thinking and problem-solving skills that allow them to ask questions that lead to a better understanding of the natural world. As part of the life, physical, and social science occupations, the Bureau of Labor Statistics anticipates continued job market growth with median annual wages greater than \$60,000.

The Biology Major Transfer Map (MTM) outlines Oregon community colleges coursework to complete in order to transfer seamlessly to any Oregon four-year public university to earn a bachelor of science (B.S.) in biology. The Biology MTM is intended for students who know they want to transfer and earn a B.S. in biology, but who are unsure of their intended transfer destination. Students should work with an advisor to ensure they properly fulfill the requirements of this Biology MTM.

## Requirements

Complete 90 credits from the following:

## Foundational Skills

### Writing

- 2 courses
- Information literacy will be included in the Writing requirement
- OSU accepts WR-122Z Composition II and WR-227Z Technical Writing but recommends WR-227Z Technical Writing
- WOU & UO accept WR-122Z Composition II and WR-227Z Technical Writing but recommend WR-122Z Composition II

Code	Title	Credits
WR-121Z	Composition I	4
WR-122Z or WR-227Z	Composition II Technical Writing	4

## Mathematics

- 2 courses
- Students who test out of MTH-111Z Precalculus I: Functions should take MTH-112Z Precalculus II: Trigonometry
- Students who test out of MTH-112Z Precalculus II: Trigonometry may substitute a recommended elective with a **MTH (p. 303)** prefix (see recommended electives below)

Code	Title	Credits
MTH-111Z	Precalculus I: Functions	4
MTH-112Z	Precalculus II: Trigonometry	4

## Biology

- 3 courses
- Each course must be at least 4 credits

Code	Title	Credits
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5

## Chemistry

- 3-course sequence with lab
- Each course must be at least 4 credits

Code	Title	Credits
CH-221	General Chemistry	5
CH-222	General Chemistry	5
CH-223	General Chemistry	5

## Physics/Math/Chemistry

- 2 sequences
- Strongly recommend seeing an advisor for assistance with choosing sequences that best match your specific academic, pre-professional, and career goals

Code	Title	Credits
<b>Physics Sequence 1</b>		
PH-201	General Physics	5
PH-202	General Physics	5
PH-203	General Physics	5
<b>Physics Sequence 2</b>		
PH-211	General Physics With Calculus	5
PH-212	General Physics With Calculus	5
PH-213	General Physics With Calculus	5
<b>Math Sequence</b> <sup>1,2</sup>		
MTH-251	Calculus I	5
MTH-252	Calculus II	5
<b>Chemistry Sequence</b> <sup>3,4</sup>		
CH-241	Organic Chemistry I	5
CH-242	Organic Chemistry II	5
CH-243	Organic Chemistry III	5



- <sup>1</sup> Students transferring to PSU may substitute STAT-243Z Elementary Statistics I & MTH-244 Statistics II for MTH-251 Calculus I & MTH-252 Calculus II.
- <sup>2</sup> Students transferring to EOU are required to take MATH-241 instead of MTH-251 Calculus I and MTH-252 Calculus II. MTH-251 Calculus I may serve as a substitute for MATH-241.
- <sup>3</sup> Students transferring to OSU are strongly recommended to take the Organic Chemistry sequence. For upper-level transfer students must pass the ACS Organic exam. Please work with an advisor.
- <sup>4</sup> Students considering pre-medical, pre-dental, and pre-pharmacy programs should consider taking the Organic Chemistry sequence. Courses in sequence must be taken at the same institution.

## General Education Distribution Areas

### Arts & Letters

- 2 courses
- Each course must be at least 3 credits

#### Arts & Letters Course List

Code	Title	Credits
ART-101	Art Appreciation	3
ART-115	Basic Design: 2-Dimensional Design	4
ART-117	Basic Design: 3-Dimensional Composition	4
ART-131	Introduction to Drawing	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ART-232	Life Drawing (Figure Emphasis)	4
ART-233	Drawing for Comics	4
ART-250	Ceramics/Beginning	4
ART-251	Ceramics/Hand-Building I	4
ART-252	Ceramics/Wheel-Throwing I	4
ART-253	Ceramics/Intermediate	4
ART-254	Ceramics/Hand-Building II	4
ART-255	Ceramics/Wheel-Throwing II	4
ART-257	Metalsmithing/Jewelry	4
ART-281	Painting: Still Life/Beginning	4
ART-282	Painting: The Figure/Beginning	4
ART-283	Painting: Landscapes/Beginning	4
ART-284	Painting: Still Life/Intermediate	4
ART-285	Painting: The Figure/Intermediate	4
ART-286	Painting: Landscapes/Intermediate	4
ART-291	Sculpture	4
ART-292	Sculpture (Figure Emphasis)	4
ART-293	Sculpture (Metal Emphasis)	4
ASL-201	Second-Year American Sign Language I	4
ASL-202	Second-Year American Sign Language II	4
ASL-203	Second-Year American Sign Language III	4
COMM-112	Persuasive Speaking	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-212	Mass Media & Society	4

Code	Title	Credits
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
COMM-227	Nonverbal Communication	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-116	Introduction to Literature: Comics	4
ENG-121	Mystery Fiction	4
ENG-130	Leadership in Literature	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-218	Arthurian Literature	4
ENG-226	Popular Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-243	African Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-261	Literature of Science Fiction	4
ENG-270	Introduction to Literary Criticism	4
ENG-271	World Literature: Ancient Through Classical Times	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4
ENG-273	World Literature: the 19th Through 21st Centuries	4
ENG-295	Revolutionary Film	4
ENG-296	Adaptation: Literature Into Film	4
FR-201	Second-Year French I	4
FR-202	Second-Year French II	4
FR-203	Second-Year French III	4
HUM-235	Perspectives on Terrorism	4
HUM-237	Perspectives on Democracy and Dialogue	4
HUM-240	American Military Conflict: Wars of National Identity	4
HUM-241	American Military Conflict: Global War	4
HUM-242	American Military Conflict: Asymmetric Warfare	4
J-211	Mass Media & Society	4
J-216	Writing for Media	4
MUS-105	Music Appreciation	3

Code	Title	Credits
MUS-111	Music Theory I	3
MUS-112	Music Theory I	3
MUS-113	Music Theory I	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-211	Music Theory II	3
MUS-212	Music Theory II	3
MUS-213	Music Theory II	3
PHL-101	Philosophical Problems	4
PHL-102	Ethics	4
PHL-103	Critical Reasoning	4
PHL-205	Moral Issues	4
PHL-210	Philosophy of Religion	4
PHL-213	Asian Philosophy	4
PHL-216	Ancient Philosophy	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-204	History of Christianity	4
R-210	World Religions	4
R-211	History of the Old Testament	4
R-212	History of the New Testament	4
SPN-201	Second-Year Spanish I	4
SPN-202	Second-Year Spanish II	4
SPN-203	Second-Year Spanish III	4
SSC-237	Perspectives on Democracy and Dialogue	4
TA-101	Appreciation of Theatre	4
TA-102	Appreciation of Theatre	4
TA-103	Appreciation of Theatre	4
TA-111	Fundamentals of Technical Theatre	4
TA-122	Costuming II	3
TA-123	Costuming III	3
TA-141	Acting I	4
TA-142	Acting II	4
TA-143	Acting III	4
TA-153	Theatre Rehearsal & Performance	1-3
WR-240	Creative Nonfiction Writing I	4
WR-241	Fiction Writing I	4
WR-242	Poetry Writing I	4
WR-243	Playwriting I	4
WR-244	Fiction Writing II	4
WR-245	Poetry Writing II	4
WR-247	Playwriting II	4
WR-248	Bookmaking: Design and Layout	4
WR-262	Introduction to Screenwriting	4
WR-263	Screenwriting II	4
WR-265	Digital Storytelling	4
WR-270	Creative Nonfiction Writing II: Food Writing	4
WS-101	Introduction to Women's Studies	4

## Social Science

- 2 courses
- Each course must be at least 3 credits

### Social Science Course List

Code	Title	Credits
ANT-101	Physical Anthropology	4
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
CJA-101	Criminology	4
CJA-201	Juvenile Delinquency	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HE-164	Body & Drugs II: Alcohol	3
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-130	Oddballs and Outcasts in Western Civilization	4
HST-131	History of Crime & Punishment in Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4
HST-138	History of Love, Marriage and the Family In Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
HUM-237	Perspectives on Democracy and Dialogue	4
PS-200	Introduction to Political Science	4
PS-201	American Government and Politics	4
PS-203	State and Local Governments	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PS-297	Introduction to Environmental Politics	4
PSY-200	Introduction to Psychology: Part 1	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-215	Introduction to Developmental Psychology	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4

Code	Title	Credits
SOC-210	Marriage, Family, & Intimate Relations	4
SOC-225	Social Problems	4
SSC-235	Perspectives on Terrorism	4
SSC-237	Perspectives on Democracy and Dialogue	4
SSC-240	American Military Conflict: Wars of National Identity	4
SSC-241	American Military Conflict: Global War	4
SSC-242	American Military Conflict: Asymmetric Warfare	4
WS-101	Introduction to Women's Studies	4

## Cultural Literacy

• 1 course

### Cultural Literacy Course List

Code	Title	Credits
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ASL-201	Second-Year American Sign Language I	4
ASL-202	Second-Year American Sign Language II	4
ASL-203	Second-Year American Sign Language III	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-213	U.S. Latinx Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-243	African Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-261	Literature of Science Fiction	4
ENG-271	World Literature: Ancient Through Classical Times	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4
ENG-273	World Literature: the 19th Through 21st Centuries	4
ENG-295	Revolutionary Film	4
FR-201	Second-Year French I	4
FR-202	Second-Year French II	4
FR-203	Second-Year French III	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4

Code	Title	Credits
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-130	Oddballs and Outcasts in Western Civilization	4
HST-131	History of Crime & Punishment in Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4
HST-138	History of Love, Marriage and the Family In Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
HUM-235	Perspectives on Terrorism	4
HUM-237	Perspectives on Democracy and Dialogue	4
HUM-240	American Military Conflict: Wars of National Identity	4
HUM-241	American Military Conflict: Global War	4
HUM-242	American Military Conflict: Asymmetric Warfare	4
MUS-206	Music Literature: History of Rock	4
PHL-101	Philosophical Problems	4
PHL-102	Ethics	4
PHL-103	Critical Reasoning	4
PHL-205	Moral Issues	4
PHL-210	Philosophy of Religion	4
PHL-213	Asian Philosophy	4
PHL-216	Ancient Philosophy	4
PS-200	Introduction to Political Science	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-204	History of Christianity	4
R-210	World Religions	4
R-211	History of the Old Testament	4
R-212	History of the New Testament	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4
SOC-210	Marriage, Family, & Intimate Relations	4
SOC-225	Social Problems	4
SPN-201	Second-Year Spanish I	4
SPN-202	Second-Year Spanish II	4
SPN-203	Second-Year Spanish III	4
SSC-235	Perspectives on Terrorism	4

Code	Title	Credits
SSC-237	Perspectives on Democracy and Dialogue	4
SSC-240	American Military Conflict: Wars of National Identity	4
SSC-241	American Military Conflict: Global War	4
SSC-242	American Military Conflict: Asymmetric Warfare	4
WR-241	Fiction Writing I	4
WR-244	Fiction Writing II	4
WS-101	Introduction to Women's Studies	4

## Other Requirements

### Elective Courses

Recommended electives by transferring institution:

- **EOU:** STAT-243Z Elementary Statistics I or an additional **Physics, Math, or Chemistry sequence** (p. 71)
- **OIT:** 4-6 credits social science, 1-3 credits humanities, or 2 credits lower division health biology
- **OSU:** COMM-111Z Public Speaking, 3 credits Fitness, 1 Difference Power and Discrimination course, or an additional **Physics, Math, or Chemistry sequence** (p. 71)
- **PSU:** STAT-243Z Elementary Statistics I or an additional **Physics, Math, or Chemistry sequence** (p. 71)
- **SOU:** STAT-243Z Elementary Statistics I or an additional **Physics, Math, or Chemistry sequence** (p. 71)
- **UO:** WR-122Z Composition II or an additional **Physics, Math, or Chemistry sequence** (p. 71)
- **WOU:** WR-122Z Composition II or an additional **Physics, Math, or Chemistry sequence** (p. 71)
- Any college-level course that would bring total credits to 90 credits
- Other courses numbered 100 or above may be used in this area, which may include up to 12 credits of career technical courses
- Please refer to the **Elective Course List** (p. 234) for courses that may be included

### Notes

- All courses must be passed with a C or better
- No course may be used to satisfy more than one requirement or distribution area

## Business (AST)

Program Code: AS.TBUSINESS

A statewide transfer agreement that identifies the community college courses needed to transfer to any Oregon public university as a junior seeking a Bachelor of Science in business disciplines.

## Requirements

Complete 90 credits from the following:

## Foundational Skills

### Writing

- 2 courses
- Information literacy will be included in the Writing requirement

Code	Title	Credits
WR-121Z	Composition I	4
WR-227Z	Technical Writing	4

### Communications

- 1 course

Code	Title	Credits
COMM-111Z	Public Speaking	4

### Mathematics

- 1 course

Code	Title	Credits
<b>EOU, PSU, SOU, or OIT</b>		
STAT-243Z	Elementary Statistics I	4
<b>OSU, WOU, or UO</b>		
MTH-251	Calculus I	5

## General Education Distribution Areas

### Arts & Letters

- 2 courses
- Each course must be at least 3 credits

#### Arts & Letters Course List

Code	Title	Credits
ART-101	Art Appreciation	3
ART-115	Basic Design: 2-Dimensional Design	4
ART-117	Basic Design: 3-Dimensional Composition	4
ART-131	Introduction to Drawing	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ART-232	Life Drawing (Figure Emphasis)	4
ART-233	Drawing for Comics	4
ART-250	Ceramics/Beginning	4
ART-251	Ceramics/Hand-Building I	4
ART-252	Ceramics/Wheel-Throwing I	4
ART-253	Ceramics/Intermediate	4
ART-254	Ceramics/Hand-Building II	4
ART-255	Ceramics/Wheel-Throwing II	4
ART-257	Metalsmithing/Jewelry	4
ART-281	Painting: Still Life/Beginning	4
ART-282	Painting: The Figure/Beginning	4
ART-283	Painting: Landscapes/Beginning	4
ART-284	Painting: Still Life/Intermediate	4
ART-285	Painting: The Figure/Intermediate	4
ART-286	Painting: Landscapes/Intermediate	4

Code	Title	Credits	Code	Title	Credits
ART-291	Sculpture	4	FR-202	Second-Year French II	4
ART-292	Sculpture (Figure Emphasis)	4	FR-203	Second-Year French III	4
ART-293	Sculpture (Metal Emphasis)	4	HUM-235	Perspectives on Terrorism	4
ASL-201	Second-Year American Sign Language I	4	HUM-237	Perspectives on Democracy and Dialogue	4
ASL-202	Second-Year American Sign Language II	4	HUM-240	American Military Conflict: Wars of National Identity	4
ASL-203	Second-Year American Sign Language III	4	HUM-241	American Military Conflict: Global War	4
COMM-112	Persuasive Speaking	4	HUM-242	American Military Conflict: Asymmetric Warfare	4
COMM-126	Introduction to Gender Communication	4	J-211	Mass Media & Society	4
COMM-140	Introduction to Intercultural Communication	4	J-216	Writing for Media	4
COMM-212	Mass Media & Society	4	MUS-105	Music Appreciation	3
COMM-218Z	Interpersonal Communication	4	MUS-111	Music Theory I	3
COMM-219	Small Group Discussion	4	MUS-112	Music Theory I	3
COMM-227	Nonverbal Communication	4	MUS-113	Music Theory I	3
ENG-104	Introduction to Literature: Fiction	4	MUS-205	Music Literature: History of Jazz	4
ENG-105	Introduction to Literature: Drama	4	MUS-206	Music Literature: History of Rock	4
ENG-106	Introduction to Literature: Poetry	4	MUS-211	Music Theory II	3
ENG-107	World Literature: Ancient Through Classical Times	4	MUS-212	Music Theory II	3
ENG-108	World Literature: Early Middle Ages through the 18th Century	4	MUS-213	Music Theory II	3
ENG-109	World Literature: The 19th through 21st Centuries	4	PHL-101	Philosophical Problems	4
ENG-116	Introduction to Literature: Comics	4	PHL-102	Ethics	4
ENG-121	Mystery Fiction	4	PHL-103	Critical Reasoning	4
ENG-130	Leadership in Literature	4	PHL-205	Moral Issues	4
ENG-194	Introduction to Film	4	PHL-210	Philosophy of Religion	4
ENG-195	American Film	4	PHL-213	Asian Philosophy	4
ENG-201	Shakespeare	4	PHL-216	Ancient Philosophy	4
ENG-202	Shakespeare	4	R-101	Judaism and Foundations of Religion	4
ENG-204	British Literature: Ancient to Enlightenment	4	R-102	Christianity and Islam	4
ENG-205	British Literature: Romantic to Contemporary	4	R-103	Asian Religions	4
ENG-213	U.S. Latinx Literature	4	R-204	History of Christianity	4
ENG-218	Arthurian Literature	4	R-210	World Religions	4
ENG-226	Popular Literature	4	R-211	History of the Old Testament	4
ENG-240	Native American Mythology	4	R-212	History of the New Testament	4
ENG-241	Norse Mythology	4	SPN-201	Second-Year Spanish I	4
ENG-243	African Mythology	4	SPN-202	Second-Year Spanish II	4
ENG-250	Greek Mythology	4	SPN-203	Second-Year Spanish III	4
ENG-251	Celtic Mythology	4	SSC-237	Perspectives on Democracy and Dialogue	4
ENG-252	Hindu Mythology	4	TA-101	Appreciation of Theatre	4
ENG-253	American Literature: Pre-Columbian to Civil War	4	TA-102	Appreciation of Theatre	4
ENG-254	American Literature: 1865 to Present	4	TA-103	Appreciation of Theatre	4
ENG-255	American Literature: Topics in American Literature	4	TA-111	Fundamentals of Technical Theatre	4
ENG-260	Introduction to Women Writers	4	TA-122	Costuming II	3
ENG-261	Literature of Science Fiction	4	TA-123	Costuming III	3
ENG-270	Introduction to Literary Criticism	4	TA-141	Acting I	4
ENG-271	World Literature: Ancient Through Classical Times	4	TA-142	Acting II	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4	TA-143	Acting III	4
ENG-273	World Literature: the 19th Through 21st Centuries	4	TA-153	Theatre Rehearsal & Performance	1-3
ENG-295	Revolutionary Film	4	WR-240	Creative Nonfiction Writing I	4
ENG-296	Adaptation: Literature Into Film	4	WR-241	Fiction Writing I	4
FR-201	Second-Year French I	4	WR-242	Poetry Writing I	4
			WR-243	Playwriting I	4



Code	Title	Credits
WR-244	Fiction Writing II	4
WR-245	Poetry Writing II	4
WR-247	Playwriting II	4
WR-248	Bookmaking: Design and Layout	4
WR-262	Introduction to Screenwriting	4
WR-263	Screenwriting II	4
WR-265	Digital Storytelling	4
WR-270	Creative Nonfiction Writing II: Food Writing	4
WS-101	Introduction to Women's Studies	4

## Social Science

- 2 courses
- Each course must be at least 3 credits

### Social Science Course List

Code	Title	Credits
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4

## Natural Science

- 2 lab science courses
- Each course must be at least 4 credits

### Natural Science Course List

Code	Title	Credits
ASC-175	Integrated Science Inquiry	4
ASC-176	Integrated Science Inquiry	4
ASC-177	Integrated Science Inquiry	4
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-112	General Biology for Health Sciences	4
BI-160L	Bird Identification & Taxonomy with Lab	4
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-165D	Natural History of the Western Deserts	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-231	Human Anatomy & Physiology I	4
BI-232	Human Anatomy & Physiology II	4
BI-233	Human Anatomy & Physiology III	4
BI-234	Introductory Microbiology	4
CH-104	Introductory Chemistry	5
CH-105	Introductory Chemistry	5
CH-106	Introductory Chemistry	5

Code	Title	Credits
CH-112	Chemistry for Health Sciences	4
CH-114	Chemistry in Art	4
CH-221	General Chemistry	5
CH-222	General Chemistry	5
CH-223	General Chemistry	5
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
G-101	General Geology	4
G-102	General Geology	4
G-103	General Geology	4
G-148	Volcanoes & Earthquakes	4
G-201	General Geology	4
G-202	General Geology	4
G-203	General Geology	4
GS-104	Earth System Science	4
GS-105	Earth System Science	4
GS-106	Earth System Science	4
GS-107	Astronomy	4
PH-121	Astronomy	4
PH-122	General Astronomy	4
PH-123	General Astronomy	4
PH-201	General Physics	5
PH-202	General Physics	5
PH-203	General Physics	5
PH-211	General Physics With Calculus	5
PH-212	General Physics With Calculus	5
PH-213	General Physics With Calculus	5
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## Cultural Literacy

- 1 course

### Cultural Literacy Course List

Code	Title	Credits
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ASL-201	Second-Year American Sign Language I	4
ASL-202	Second-Year American Sign Language II	4
ASL-203	Second-Year American Sign Language III	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
ENG-107	World Literature: Ancient Through Classical Times	4

Code	Title	Credits
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-213	U.S. Latinx Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-243	African Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-261	Literature of Science Fiction	4
ENG-271	World Literature: Ancient Through Classical Times	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4
ENG-273	World Literature: the 19th Through 21st Centuries	4
ENG-295	Revolutionary Film	4
FR-201	Second-Year French I	4
FR-202	Second-Year French II	4
FR-203	Second-Year French III	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-130	Oddballs and Outcasts in Western Civilization	4
HST-131	History of Crime & Punishment in Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4
HST-138	History of Love, Marriage and the Family In Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
HUM-235	Perspectives on Terrorism	4
HUM-237	Perspectives on Democracy and Dialogue	4
HUM-240	American Military Conflict: Wars of National Identity	4
HUM-241	American Military Conflict: Global War	4
HUM-242	American Military Conflict: Asymmetric Warfare	4
MUS-206	Music Literature: History of Rock	4
PHL-101	Philosophical Problems	4
PHL-102	Ethics	4
PHL-103	Critical Reasoning	4
PHL-205	Moral Issues	4
PHL-210	Philosophy of Religion	4

Code	Title	Credits
PHL-213	Asian Philosophy	4
PHL-216	Ancient Philosophy	4
PS-200	Introduction to Political Science	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-204	History of Christianity	4
R-210	World Religions	4
R-211	History of the Old Testament	4
R-212	History of the New Testament	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4
SOC-210	Marriage, Family, & Intimate Relations	4
SOC-225	Social Problems	4
SPN-201	Second-Year Spanish I	4
SPN-202	Second-Year Spanish II	4
SPN-203	Second-Year Spanish III	4
SSC-235	Perspectives on Terrorism	4
SSC-237	Perspectives on Democracy and Dialogue	4
SSC-240	American Military Conflict: Wars of National Identity	4
SSC-241	American Military Conflict: Global War	4
SSC-242	American Military Conflict: Asymmetric Warfare	4
WR-241	Fiction Writing I	4
WR-244	Fiction Writing II	4
WS-101	Introduction to Women's Studies	4

## Other Requirements

### Business Specific Requirements

- 5 courses

#### Business Specific Requirements Course List

Code	Title	Credits
BA-101	Introduction to Business	4
BA-131	Introduction to Business Computing	4
BA-211	Financial Accounting	4
BA-213	Decision Making With Accounting Information	4
BA-226	Business Law I	4

### Elective Courses

- Any college-level course that would bring total credits to 90 credits
- Other courses numbered 100 or above may be used in this area, which may include up to 12 credits of career technical courses
- Please refer to the [Elective Course List \(p. 234\)](#) for courses that may be included
- Up to 3 credits of [PE \(p. 322\)](#) courses

## Notes

- All courses must be passed with a C or better
- No course may be used to satisfy more than one requirement or distribution area

# ASSOCIATE OF GENERAL STUDIES (AGS)

Program Code: AGS.GENERAL

The Associate of General Studies is a two-year foundational degree designed to provide flexibility and uses a variety of college-level course work to meet degree requirements. Students are encouraged to work closely with an academic advisor if they are planning to transfer to a four-year college or university upon completion of the AGS degree.

Program outcomes for the AGS degree include a two-year college degree experience that supports individual student needs and interests.

## Requirements

Complete 90 credits from the following:

### Foundational Skills

#### Writing

- 1 Course

Code	Title	Credits
WR-121Z	Composition I	4

#### Communications

- 1 Course

Code	Title	Credits
COMM-100Z	Introduction to Communication	4
COMM-111Z	Public Speaking	4
COMM-112	Persuasive Speaking	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-212	Mass Media & Society	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
COMM-227	Nonverbal Communication	4

#### Mathematics

- 1 Course

Code	Title	Credits
MTH-065	Algebra II	4
MTH-080	Technical Mathematics II	3
MTH-095	Algebra III	4
MTH-098	College Math Foundations	4
MTH-105Z	Math in Society	4
Higher Level Math or Statistics		

#### Health & Physical Education

- 1 Course
- Any 100-level course or above from the [Physical Education/Health/Safety/First Aid Related Instruction list \(p. 230\)](#)

## General Education Distribution Areas

### Arts & Letters

- 4 credits

#### Arts & Letters Course List

Code	Title	Credits
ART-101	Art Appreciation	3
ART-115	Basic Design: 2-Dimensional Design	4
ART-117	Basic Design: 3-Dimensional Composition	4
ART-131	Introduction to Drawing	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ART-232	Life Drawing (Figure Emphasis)	4
ART-233	Drawing for Comics	4
ART-250	Ceramics/Beginning	4
ART-251	Ceramics/Hand-Building I	4
ART-252	Ceramics/Wheel-Throwing I	4
ART-253	Ceramics/Intermediate	4
ART-254	Ceramics/Hand-Building II	4
ART-255	Ceramics/Wheel-Throwing II	4
ART-257	Metalsmithing/Jewelry	4
ART-281	Painting: Still Life/Beginning	4
ART-282	Painting: The Figure/Beginning	4
ART-283	Painting: Landscapes/Beginning	4
ART-284	Painting: Still Life/Intermediate	4
ART-285	Painting: The Figure/Intermediate	4
ART-286	Painting: Landscapes/Intermediate	4
ART-291	Sculpture	4
ART-292	Sculpture (Figure Emphasis)	4
ART-293	Sculpture (Metal Emphasis)	4
ASL-201	Second-Year American Sign Language I	4
ASL-202	Second-Year American Sign Language II	4
ASL-203	Second-Year American Sign Language III	4
COMM-112	Persuasive Speaking	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-212	Mass Media & Society	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
COMM-227	Nonverbal Communication	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-116	Introduction to Literature: Comics	4
ENG-121	Mystery Fiction	4
ENG-130	Leadership in Literature	4

Code	Title	Credits	Code	Title	Credits
ENG-194	Introduction to Film	4	PHL-210	Philosophy of Religion	4
ENG-195	American Film	4	PHL-213	Asian Philosophy	4
ENG-201	Shakespeare	4	PHL-216	Ancient Philosophy	4
ENG-202	Shakespeare	4	R-101	Judaism and Foundations of Religion	4
ENG-204	British Literature: Ancient to Enlightenment	4	R-102	Christianity and Islam	4
ENG-205	British Literature: Romantic to Contemporary	4	R-103	Asian Religions	4
ENG-213	U.S. Latinx Literature	4	R-204	History of Christianity	4
ENG-218	Arthurian Literature	4	R-210	World Religions	4
ENG-226	Popular Literature	4	R-211	History of the Old Testament	4
ENG-240	Native American Mythology	4	R-212	History of the New Testament	4
ENG-241	Norse Mythology	4	SPN-201	Second-Year Spanish I	4
ENG-243	African Mythology	4	SPN-202	Second-Year Spanish II	4
ENG-250	Greek Mythology	4	SPN-203	Second-Year Spanish III	4
ENG-251	Celtic Mythology	4	SSC-237	Perspectives on Democracy and Dialogue	4
ENG-252	Hindu Mythology	4	TA-101	Appreciation of Theatre	4
ENG-253	American Literature: Pre-Columbian to Civil War	4	TA-102	Appreciation of Theatre	4
ENG-254	American Literature: 1865 to Present	4	TA-103	Appreciation of Theatre	4
ENG-255	American Literature: Topics in American Literature	4	TA-111	Fundamentals of Technical Theatre	4
ENG-260	Introduction to Women Writers	4	TA-122	Costuming II	3
ENG-261	Literature of Science Fiction	4	TA-123	Costuming III	3
ENG-270	Introduction to Literary Criticism	4	TA-141	Acting I	4
ENG-271	World Literature: Ancient Through Classical Times	4	TA-142	Acting II	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4	TA-143	Acting III	4
ENG-273	World Literature: the 19th Through 21st Centuries	4	TA-153	Theatre Rehearsal & Performance	1-3
ENG-295	Revolutionary Film	4	WR-240	Creative Nonfiction Writing I	4
ENG-296	Adaptation: Literature Into Film	4	WR-241	Fiction Writing I	4
FR-201	Second-Year French I	4	WR-242	Poetry Writing I	4
FR-202	Second-Year French II	4	WR-243	Playwriting I	4
FR-203	Second-Year French III	4	WR-244	Fiction Writing II	4
HUM-235	Perspectives on Terrorism	4	WR-245	Poetry Writing II	4
HUM-237	Perspectives on Democracy and Dialogue	4	WR-247	Playwriting II	4
HUM-240	American Military Conflict: Wars of National Identity	4	WR-248	Bookmaking: Design and Layout	4
HUM-241	American Military Conflict: Global War	4	WR-262	Introduction to Screenwriting	4
HUM-242	American Military Conflict: Asymmetric Warfare	4	WR-263	Screenwriting II	4
J-211	Mass Media & Society	4	WR-265	Digital Storytelling	4
J-216	Writing for Media	4	WR-270	Creative Nonfiction Writing II: Food Writing	4
MUS-105	Music Appreciation	3	WS-101	Introduction to Women's Studies	4
MUS-111	Music Theory I	3			
MUS-112	Music Theory I	3			
MUS-113	Music Theory I	3			
MUS-205	Music Literature: History of Jazz	4			
MUS-206	Music Literature: History of Rock	4			
MUS-211	Music Theory II	3			
MUS-212	Music Theory II	3			
MUS-213	Music Theory II	3			
PHL-101	Philosophical Problems	4			
PHL-102	Ethics	4			
PHL-103	Critical Reasoning	4			
PHL-205	Moral Issues	4			

## Social Science

• 4 Credits

### Social Science Course List

Code	Title	Credits
ANT-101	Physical Anthropology	4
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
CJA-101	Criminology	4
CJA-201	Juvenile Delinquency	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
GEO-100	Introduction to Physical Geography	4



Code	Title	Credits
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HE-164	Body & Drugs II: Alcohol	3
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-130	Oddballs and Outcasts in Western Civilization	4
HST-131	History of Crime & Punishment in Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4
HST-138	History of Love, Marriage and the Family In Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
HUM-237	Perspectives on Democracy and Dialogue	4
PS-200	Introduction to Political Science	4
PS-201	American Government and Politics	4
PS-203	State and Local Governments	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PS-297	Introduction to Environmental Politics	4
PSY-200	Introduction to Psychology: Part 1	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-215	Introduction to Developmental Psychology	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4
SOC-210	Marriage, Family, & Intimate Relations	4
SOC-225	Social Problems	4
SSC-235	Perspectives on Terrorism	4
SSC-237	Perspectives on Democracy and Dialogue	4
SSC-240	American Military Conflict: Wars of National Identity	4
SSC-241	American Military Conflict: Global War	4
SSC-242	American Military Conflict: Asymmetric Warfare	4
WS-101	Introduction to Women's Studies	4

### Science/Math/Computer Science

• 4 Credits

### Science/Math/Computer Science Course List

Code	Title	Credits
ASC-175	Integrated Science Inquiry	4
ASC-176	Integrated Science Inquiry	4
ASC-177	Integrated Science Inquiry	4
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-112	General Biology for Health Sciences	4
BI-160	Bird Identification & Taxonomy	3
BI-160L	Bird Identification & Taxonomy with Lab	4
BI-165C	Natural History of the Oregon Coast	3
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-165D	Natural History of the Western Deserts	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-231	Human Anatomy & Physiology I	4
BI-232	Human Anatomy & Physiology II	4
BI-233	Human Anatomy & Physiology III	4
BI-234	Introductory Microbiology	4
CH-104	Introductory Chemistry	5
CH-105	Introductory Chemistry	5
CH-106	Introductory Chemistry	5
CH-112	Chemistry for Health Sciences	4
CH-114	Chemistry in Art	4
CH-221	General Chemistry	5
CH-222	General Chemistry	5
CH-223	General Chemistry	5
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
G-101	General Geology	4
G-102	General Geology	4
G-103	General Geology	4
G-148	Volcanoes & Earthquakes	4
G-201	General Geology	4
G-202	General Geology	4
G-203	General Geology	4
GS-104	Earth System Science	4
GS-105	Earth System Science	4
GS-106	Earth System Science	4
GS-107	Astronomy	4
MTH-105Z	Math in Society	4
MTH-111Z	Precalculus I: Functions	4

Code	Title	Credits
MTH-112Z	Precalculus II: Trigonometry	4
MTH-211	Fundamentals of Elementary Math I	4
MTH-212	Fundamentals of Elementary Math II	4
MTH-213	Fundamentals of Elementary Math III	4
MTH-244	Statistics II	4
MTH-251	Calculus I	5
MTH-252	Calculus II	5
MTH-253	Calculus III	5
MTH-254	Vector Calculus	5
MTH-256	Differential Equations	4
MTH-261	Linear Algebra	4
PH-121	Astronomy	4
PH-122	General Astronomy	4
PH-123	General Astronomy	4
PH-201	General Physics	5
PH-202	General Physics	5
PH-203	General Physics	5
PH-211	General Physics With Calculus	5
PH-212	General Physics With Calculus	5
PH-213	General Physics With Calculus	5
STAT-243Z	Elementary Statistics I	4
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## Other Requirements

### Other College-level Courses

- Any college-level course that would bring total credits to 90 credits

### Notes

- No course may be used to satisfy more than one requirement or distribution area

# OREGON TRANSFER MODULE (OTM)

**Program Code:** NA.OTM

The OTM represents approximately half of an associate's degree (45 credits). The OTM is designed for students who wish to transfer to a public university in Oregon or another Oregon community college. Completion of the OTM can help those students taking courses at multiple post-secondary institutions by ensuring transferability of coursework. This is not a degree or certificate but is documentation on a student's transcript that they have met a subset of common general education requirements. Students interested in the OTM should meet with an academic advisor in Student Services.

## Requirements

Complete 45 credits from the following:

### Foundational Skills

#### Writing

- 2 Courses
- Information literacy will be included in the Writing Requirement

Code	Title	Credits
WR-121Z	Composition I	4
WR-122Z or WR-227Z	Composition II Technical Writing	4

#### Oral Communication

- 1 Course

Code	Title	Credits
COMM-111Z	Public Speaking	4

#### Mathematics

- 1 Course

Code	Title	Credits
MTH-105Z	Math in Society	4
MTH-111Z	Precalculus I: Functions	4
MTH-112Z	Precalculus II: Trigonometry	4
MTH-211	Fundamentals of Elementary Math I	4
MTH-212	Fundamentals of Elementary Math II	4
MTH-213	Fundamentals of Elementary Math III	4
MTH-251	Calculus I	5

## General Education Distribution Areas

### Arts & Letters

- 3 Courses

#### Arts & Letters Course List

Code	Title	Credits
ART-101	Art Appreciation	3
ART-115	Basic Design: 2-Dimensional Design	4
ART-117	Basic Design: 3-Dimensional Composition	4

Code	Title	Credits
ART-131	Introduction to Drawing	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ART-232	Life Drawing (Figure Emphasis)	4
ART-233	Drawing for Comics	4
ART-250	Ceramics/Beginning	4
ART-251	Ceramics/Hand-Building I	4
ART-252	Ceramics/Wheel-Throwing I	4
ART-253	Ceramics/Intermediate	4
ART-254	Ceramics/Hand-Building II	4
ART-255	Ceramics/Wheel-Throwing II	4
ART-257	Metalsmithing/Jewelry	4
ART-281	Painting: Still Life/Beginning	4
ART-282	Painting: The Figure/Beginning	4
ART-283	Painting: Landscapes/Beginning	4
ART-284	Painting: Still Life/Intermediate	4
ART-285	Painting: The Figure/Intermediate	4
ART-286	Painting: Landscapes/Intermediate	4
ART-291	Sculpture	4
ART-292	Sculpture (Figure Emphasis)	4
ART-293	Sculpture (Metal Emphasis)	4
ASL-201	Second-Year American Sign Language I	4
ASL-202	Second-Year American Sign Language II	4
ASL-203	Second-Year American Sign Language III	4
COMM-112	Persuasive Speaking	4
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-212	Mass Media & Society	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
COMM-227	Nonverbal Communication	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-116	Introduction to Literature: Comics	4
ENG-121	Mystery Fiction	4
ENG-130	Leadership in Literature	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-218	Arthurian Literature	4

Code	Title	Credits	Code	Title	Credits
ENG-226	Popular Literature	4	R-211	History of the Old Testament	4
ENG-240	Native American Mythology	4	R-212	History of the New Testament	4
ENG-241	Norse Mythology	4	SPN-201	Second-Year Spanish I	4
ENG-243	African Mythology	4	SPN-202	Second-Year Spanish II	4
ENG-250	Greek Mythology	4	SPN-203	Second-Year Spanish III	4
ENG-251	Celtic Mythology	4	SSC-237	Perspectives on Democracy and Dialogue	4
ENG-252	Hindu Mythology	4	TA-101	Appreciation of Theatre	4
ENG-253	American Literature: Pre-Columbian to Civil War	4	TA-102	Appreciation of Theatre	4
ENG-254	American Literature: 1865 to Present	4	TA-103	Appreciation of Theatre	4
ENG-255	American Literature: Topics in American Literature	4	TA-111	Fundamentals of Technical Theatre	4
ENG-260	Introduction to Women Writers	4	TA-122	Costuming II	3
ENG-261	Literature of Science Fiction	4	TA-123	Costuming III	3
ENG-270	Introduction to Literary Criticism	4	TA-141	Acting I	4
ENG-271	World Literature: Ancient Through Classical Times	4	TA-142	Acting II	4
ENG-272	World Literature: Early Middle Ages through the 18th Century	4	TA-143	Acting III	4
ENG-273	World Literature: the 19th Through 21st Centuries	4	TA-153	Theatre Rehearsal & Performance	1-3
ENG-295	Revolutionary Film	4	WR-240	Creative Nonfiction Writing I	4
ENG-296	Adaptation: Literature Into Film	4	WR-241	Fiction Writing I	4
FR-201	Second-Year French I	4	WR-242	Poetry Writing I	4
FR-202	Second-Year French II	4	WR-243	Playwriting I	4
FR-203	Second-Year French III	4	WR-244	Fiction Writing II	4
HUM-235	Perspectives on Terrorism	4	WR-245	Poetry Writing II	4
HUM-237	Perspectives on Democracy and Dialogue	4	WR-247	Playwriting II	4
HUM-240	American Military Conflict: Wars of National Identity	4	WR-248	Bookmaking: Design and Layout	4
HUM-241	American Military Conflict: Global War	4	WR-262	Introduction to Screenwriting	4
HUM-242	American Military Conflict: Asymmetric Warfare	4	WR-263	Screenwriting II	4
J-211	Mass Media & Society	4	WR-265	Digital Storytelling	4
J-216	Writing for Media	4	WR-270	Creative Nonfiction Writing II: Food Writing	4
MUS-105	Music Appreciation	3	WS-101	Introduction to Women's Studies	4
MUS-111	Music Theory I	3			
MUS-112	Music Theory I	3			
MUS-113	Music Theory I	3			
MUS-205	Music Literature: History of Jazz	4			
MUS-206	Music Literature: History of Rock	4			
MUS-211	Music Theory II	3			
MUS-212	Music Theory II	3			
MUS-213	Music Theory II	3			
PHL-101	Philosophical Problems	4			
PHL-102	Ethics	4			
PHL-103	Critical Reasoning	4			
PHL-205	Moral Issues	4			
PHL-210	Philosophy of Religion	4			
PHL-213	Asian Philosophy	4			
PHL-216	Ancient Philosophy	4			
R-101	Judaism and Foundations of Religion	4			
R-102	Christianity and Islam	4			
R-103	Asian Religions	4			
R-204	History of Christianity	4			
R-210	World Religions	4			

## Social Science

• 3 Courses

### Social Science Course List

Code	Title	Credits
ANT-101	Physical Anthropology	4
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
CJA-101	Criminology	4
CJA-201	Juvenile Delinquency	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HE-164	Body & Drugs II: Alcohol	3
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4

Code	Title	Credits	Code	Title	Credits
HST-130	Oddballs and Outcasts in Western Civilization	4	BI-160	Bird Identification & Taxonomy	3
HST-131	History of Crime & Punishment in Western Civilization	4	BI-160L	Bird Identification & Taxonomy with Lab	4
HST-132	History of Language and the Written Word in Western Civilization	4	BI-165C	Natural History of the Oregon Coast	3
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4	BI-165CL	Natural History of the Oregon Coast with Lab	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4	BI-165D	Natural History of the Western Deserts	4
HST-138	History of Love, Marriage and the Family In Western Civilization	4	BI-175	Integrated Science Inquiry	4
HST-201	History of the United States	4	BI-176	Integrated Science Inquiry	4
HST-202	History of the United States	4	BI-177	Integrated Science Inquiry	4
HST-203	History of the United States	4	BI-204	Elementary Microbiology	4
HUM-237	Perspectives on Democracy and Dialogue	4	BI-211	General Biology for Science Majors (Cellular Biology)	5
PS-200	Introduction to Political Science	4	BI-212	General Biology for Science Majors (Animal Biology)	5
PS-201	American Government and Politics	4	BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
PS-203	State and Local Governments	4	BI-231	Human Anatomy & Physiology I	4
PS-204	Introduction to Comparative Politics	4	BI-232	Human Anatomy & Physiology II	4
PS-205	International Relations	4	BI-233	Human Anatomy & Physiology III	4
PS-225	Introduction to Political Ideologies	4	BI-234	Introductory Microbiology	4
PS-297	Introduction to Environmental Politics	4	CH-104	Introductory Chemistry	5
PSY-200	Introduction to Psychology: Part 1	4	CH-105	Introductory Chemistry	5
PSY-205	Introduction to Psychology: Part 2	4	CH-106	Introductory Chemistry	5
PSY-215	Introduction to Developmental Psychology	4	CH-112	Chemistry for Health Sciences	4
PSY-219	Introduction to Abnormal Psychology	4	CH-114	Chemistry in Art	4
PSY-231	Introduction to Human Sexuality	4	CH-221	General Chemistry	5
SOC-204	Introduction to Sociology	4	CH-222	General Chemistry	5
SOC-205	Social Stratification & Social Systems	4	CH-223	General Chemistry	5
SOC-206	Institutions & Social Change	4	ESR-171	Introduction to Environmental Science	4
SOC-210	Marriage, Family, & Intimate Relations	4	ESR-172	Introduction to Climate Change	4
SOC-225	Social Problems	4	ESR-173	Introduction to Sustainability	4
SSC-235	Perspectives on Terrorism	4	G-101	General Geology	4
SSC-237	Perspectives on Democracy and Dialogue	4	G-102	General Geology	4
SSC-240	American Military Conflict: Wars of National Identity	4	G-103	General Geology	4
SSC-241	American Military Conflict: Global War	4	G-148	Volcanoes & Earthquakes	4
SSC-242	American Military Conflict: Asymmetric Warfare	4	G-201	General Geology	4
WS-101	Introduction to Women's Studies	4	G-202	General Geology	4
			G-203	General Geology	4
			GS-104	Earth System Science	4
			GS-105	Earth System Science	4
			GS-106	Earth System Science	4
			GS-107	Astronomy	4
			MTH-105Z	Math in Society	4
			MTH-111Z	Precalculus I: Functions	4
			MTH-112Z	Precalculus II: Trigonometry	4
			MTH-211	Fundamentals of Elementary Math I	4
			MTH-212	Fundamentals of Elementary Math II	4
			MTH-213	Fundamentals of Elementary Math III	4
			MTH-244	Statistics II	4
			MTH-251	Calculus I	5
			MTH-252	Calculus II	5
			MTH-253	Calculus III	5
			MTH-254	Vector Calculus	5

## Science/Math/Computer Science

- 3 Courses
- Including at least 1 biological or physical science with a lab

### Science/Math/Computer Science Course List

Code	Title	Credits
ASC-175	Integrated Science Inquiry	4
ASC-176	Integrated Science Inquiry	4
ASC-177	Integrated Science Inquiry	4
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-112	General Biology for Health Sciences	4



Code	Title	Credits
MTH-256	Differential Equations	4
MTH-261	Linear Algebra	4
PH-121	Astronomy	4
PH-122	General Astronomy	4
PH-123	General Astronomy	4
PH-201	General Physics	5
PH-202	General Physics	5
PH-203	General Physics	5
PH-211	General Physics With Calculus	5
PH-212	General Physics With Calculus	5
PH-213	General Physics With Calculus	5
STAT-243Z	Elementary Statistics I	4
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## Other Requirements

### Elective Courses

- Combined with above must equal at least 45 credits
- Courses must be from Arts & Letters, Social Science, or Science/Math/Computer Science disciplines above

### Notes

- All courses must be passed with a C or better
- No course may be used to satisfy more than one requirement or distribution area
- All courses must be 100 level or higher
- All courses must be at least 3 credits

# ASSOCIATE OF SCIENCE DEGREES (AS)

The Associate of Science degree is designed for students who wish to take the first two years of their coursework at Clackamas Community College, then transfer to a particular four-year institution to complete a degree in the designated discipline. The Associate of Science degree has both general education and discipline specific requirements. In addition, this degree is institution specific, and the courses listed have been agreed on by the receiving institution as acceptable towards the four-year degree. Completing the Associate of Science degree does not guarantee acceptance into schools or departments that have special admissions requirements. It is important for the student to meet with an advisor to ensure that they fully understand the degree requirements.

## Requirements

### Foundational Skills

#### Writing

- 2 Courses

Code	Title	Credits
WR-121Z	Composition I	4
WR-122Z or WR-227Z	Composition II Technical Writing	4

#### Mathematics

- 1 Course

Code	Title	Credits
MTH-105Z	Math in Society	4
MTH-111Z	Precalculus I: Functions	4
MTH-112Z	Precalculus II: Trigonometry	4
MTH-251	Calculus I	5
MTH-252	Calculus II	5

## General Education Distribution Areas

### Arts & Letters and Social Sciences

- 3-4 courses with at least 1 course in Arts & Letters and 1 course in Social Sciences
- See specific degree and institution for list of approved courses.

### Science/Math/Computer Science

- 2-3 courses totaling at least 7 credits
- See specific degree and institution for list of approved courses.

## Additional Requirements

### University Specific Requirements

- See specific degree and institution for list of approved courses.

## Electives

### University Specific Requirements

- Will vary. See specific degree and institution for list of approved courses.

Total minimum of 90 credits required.

#### Notes:

- All courses must be 100 level or higher
- All courses must be at least three credits
- All courses must be passed with a C or better
- No course may be used to satisfy more than one requirement or distribution area

# PROGRAMS A-Z

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## A

- Accounting Clerk, Certificate (p. 179)
- Accounting, AAS (p. 129)
- Administrative Assistant Training, Certificate (p. 180)
- Administrative Assistant, Certificate (p. 179)
- Administrative Professional, AAS (p. 130)
- Alcohol & Drug Counselor, Career Pathway Certificate (p. 216)
- Architectural Engineering Emphasis, AS - with Oregon State University
- Associate of Arts Oregon Transfer (AAOT) (p. 46)
- Associate of General Studies (AGS) (p. 80)
- Auto Body/Collision Repair and Refinishing Technology, AAS (p. 131)
- Auto Body/Collision Repair and Refinishing Technology, Career Pathway Certificate (p. 216)
- Auto Collision Refinish, Career Pathway Certificate
- Auto Collision Repair, Career Pathway Certificate
- Automotive Service Technology, AAS (p. 132)

## B

- Biological Engineering Emphasis, AS - with Oregon State University (p. 92)
- Biology (AST) (p. 71)
- Biology Emphasis, AS - with Oregon State University (p. 93)
- Biology Emphasis, AS - with Portland State University (p. 95)
- Biology Emphasis, AS - with University of Oregon (p. 96)
- Business (ASOT) (p. 56)
- Business (AST) (p. 75)
- Business Management, Certificate (p. 181)
- Business, AAS (p. 134)

## C

- Career & Technical Education (CTE) Licensure Prep, Certificate (p. 181)
- Chemical Engineering Emphasis, AS - with Oregon State University (p. 97)
- Civil Engineering Emphasis, AS - with Oregon State University (p. 99)
- Civil Engineering Emphasis, AS - with Portland State University (p. 101)
- CNC Operator, Career Pathway Certificate (p. 217)
- Computer & Network Administration, AAS (p. 135)
- Computer & Network Administration, Certificate (p. 182)
- Computer Application Specialist, Certificate (p. 184)
- Computer Engineering Emphasis, AS - with Portland State University (p. 102)
- Computer Science (ASOT) (p. 61)
- Computer Science (AST)
- Computer Science Emphasis, AS - with Portland State University (p. 103)
- Computer-Aided Drafting (CAD), Certificate (p. 183)
- Computer-Aided Manufacturing, AAS (p. 136)

- Construction Engineering Management Emphasis, AS - with Oregon State University (p. 104)
- Construction Trades, General Apprenticeship, AAS (p. 137)
- Construction Trades, General Apprenticeship, Certificate (p. 185)
- Criminal Justice, AAS (p. 139)
- Criminal Justice, Corrections Option, AAS (p. 140)

## D

- Dental Assistant, Certificate (p. 186)
- Digital Media Communications, AAS (p. 141)

## E

- Early Childhood Education & Family Studies, AAS (p. 143)
- Early Childhood Education & Family Studies, Certificate (p. 187)
- Ecological Engineering Emphasis, AS - with Oregon State University (p. 106)
- Educación infantil y estudios familiares, AAS (p. 145)
- Educación infantil y estudios familiares, Certificate (p. 187)
- Electrical Engineering Emphasis, AS - with Oregon Institute of Technology (Oregon Tech) (p. 107)
- Electrical Engineering Emphasis, AS - with Oregon State University (p. 108)
- Electrical Engineering Emphasis, AS - with Portland State University (p. 110)
- Electrician Apprenticeship Technologies, AAS (p. 147)
- Electrician Apprenticeship Technologies, Certificate (p. 188)
- Electronics Engineering Technology, AAS (p. 149)
- Electronics Engineering Technology, Certificate (p. 189)
- Elementary Education (AAOT) (p. 51)
- Emergency Management Professional, AAS (p. 151)
- Emergency Medical Technician, Career Pathway Certificate
- Emergency Medical Technology, Certificate (p. 190)
- Employment Skills Training, Certificate (p. 191)
- Energy Systems Maintenance Technician, Career Pathway Certificate (p. 217)
- English Emphasis, AS - with Portland State University (p. 111)
- English Literature (AAT) (p. 67)
- Entry Level Journalist, Career Pathway Certificate (p. 218)
- Entry Level Welder, Career Pathway Certificate (p. 219)
- Environmental Engineering Emphasis, AS - with Oregon State University (p. 113)
- Environmental Engineering Emphasis, AS - with Portland State University (p. 115)

## F

- First-Line Supervisor Fundamentals, Certificate (p. 191)
- Fitness Technology, Certificate (p. 192)
- Front-End Web Development, Certificate
- Full-Stack Web Development, AAS

## G

- Geographic Information Systems (GIS) Technology, Certificate (p. 193)
- Geology Emphasis, AS - with Portland State University (p. 116)

- Gerontology for Health Care Professionals, Career Pathway Certificate (p. 219)
- Gerontology, Certificate (p. 193)

## H

- Healthcare Careers, Certificate (p. 195)
- High Purity Water, Certificate (p. 195)
- Horticulture Emphasis, AS - with Oregon State University (p. 117)
- Horticulture, AAS (p. 152)
- Horticulture, Certificate (p. 195)
- Human Resource Management Essentials, Career Pathway Certificate (p. 220)
- Human Resource Management, Certificate (p. 196)
- Human Services Generalist, AAS (p. 155)
- Human Services Generalist, Certificate (p. 197)

## I

- Industrial Maintenance Technology Mechanical Maintenance, Certificate (p. 199)
- Industrial Maintenance Technology, AAS (p. 157)
- Industrial Maintenance Technology, Certificate (p. 198)
- Industrial Mechanics and Maintenance Technology Apprenticeship, AAS (p. 158)
- Industrial/Manufacturing Engineering Emphasis, AS - with Oregon State University (p. 118)
- Initial Welding, Certificate
- Integrated Marketing & Promotion, Career Pathway Certificate (p. 220)
- Irrigation Technician, Career Pathway Certificate (p. 221)

## J

- Juvenile Corrections, Certificate (p. 200)

## L

- Landscape Management, AAS (p. 159)
- Landscape Management, Arboriculture Option, AAS (p. 161)
- Landscape Practices, Certificate (p. 201)
- Limited License Electrician Apprenticeship Technologies, Career Pathway Certificate (p. 221)

## M

- Machine Tool Technology, AAS (p. 162)
- Machine Tool Technology, Certificate (p. 202)
- Management Fundamentals, Career Pathway Certificate (p. 222)
- Manual Apprenticeship Trades, Career Pathway Certificate (p. 223)
- Marketing, Certificate (p. 202)
- Mastercam, Certificate (p. 203)
- Mechanical Engineering Emphasis, AS - with Oregon Institute of Technology (Oregon Tech) (p. 120)
- Mechanical Engineering Emphasis, AS - with Oregon State University (p. 121)
- Mechanical Engineering Emphasis, AS - with Portland State University (p. 123)

- Mechanics and Maintenance Apprenticeship Technologies: Trade Worker Apprenticeship Technologies, Career Pathway Certificate (p. 223)
- Mechatronics, Certificate (p. 203)
- Medical Assistant, Certificate (p. 204)
- Medical Billing and Coding, Certificate (p. 205)
- Microelectronics Systems Technology, AAS (p. 164)
- Microelectronics Systems Technology, Certificate (p. 206)
- Music Emphasis, AS - with Portland State University (p. 124)
- Music Performance & Technology, AAS (p. 165)
- Music Technology, Certificate (p. 207)

## N

- Nursing (RN), AAS (p. 167)
- Nursing Assistant - Gerontology Specialist, Career Pathway Certificate (p. 224)

## O

- Occupational Skills Training, Certificate (p. 208)
- Oregon Transfer Module (OTM) (p. 84)
- Organic Farming, Certificate (p. 209)

## P

- Phlebotomy, Certificate
- Plant Health Management, Career Pathway Certificate (p. 224)
- Project Management Tools & Techniques, Career Pathway Certificate (p. 225)
- Project Management, AAS (p. 170)
- Project Management, Certificate (p. 210)

## R

- Renewable Energy Engineering Emphasis, AS - with Oregon Institute of Technology (Oregon Tech) (p. 128)
- Renewable Energy Technology, AAS (p. 171)
- Renewable Energy Technology, Certificate (p. 210)
- Retail Management, Certificate (p. 211)

## U

- Under Car Technician - Automatic Transmission, Career Pathway Certificate (p. 226)
- Under Car Technician - Manual Transmission, Career Pathway Certificate (p. 226)

## V

- Video Production Technician, Career Pathway Certificate (p. 227)

## W

- Water & Environmental Technology, AAS (p. 172)
- Water & Environmental Technology, Certificate (p. 212)
- Welding Technology, AAS (p. 174)
- Welding Technology, Certificate (p. 213)
- Wilderness Survival & Leadership, Career Pathway Certificate (p. 228)
- Wildland Fire Forestry, Career Pathway Certificate (p. 228)

- Wildland Fire Management, AAS (p. 177)
- Wildland Fire Science, Certificate (p. 214)
- Wildland FireFighter 1, Career Pathway Certificate (p. 228)



# Biological Engineering Emphasis, AS - with Oregon State University

Program Code: AS.OSUBIOLENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

### First Year

Fall Term		Credits
COMM-111Z	Public Speaking	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>16</b>

### Winter Term

BI-204	Elementary Microbiology	4
CH-221	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
<b>Credits</b>		<b>17</b>

### Spring Term

CH-222	General Chemistry	5
MTH-254	Vector Calculus	5
WR-227Z	Technical Writing	4
<b>Credits</b>		<b>14</b>

### Summer Term

CH-223	General Chemistry	5
MTH-256	Differential Equations	4
Social Process Electives (p. 92)		4
<b>Credits</b>		<b>13</b>

### Second Year

Fall Term		
CH-241	Organic Chemistry I	5

ENGR-211	Statics	4
PH-211	General Physics With Calculus	5
<b>Credits</b>		<b>14</b>

### Winter Term

CH-242	Organic Chemistry II	5
PH-212	General Physics With Calculus	5
Literature and the Arts Electives (p. 92)		3-4
<b>Credits</b>		<b>13-14</b>

### Spring Term

CH-243	Organic Chemistry III	5
ENGR-201	Electrical Fundamentals	4
PH-213	General Physics With Calculus	5
Western Culture Electives (p. 93)		4
<b>Credits</b>		<b>18</b>
<b>Total Credits</b>		<b>105-106</b>

## Literature and the Arts Electives

Code	Title	Credits
ART-101	Art Appreciation	3
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-226	Popular Literature	4
ENG-230	Documentary Film	4
ENG-241	Norse Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-270	Introduction to Literary Criticism	4
MUS-105	Music Appreciation	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

## Social Process Electives

Code	Title	Credits
ANT-103	Cultural Anthropology	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
PS-201	American Government and Politics	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PSY-200	Introduction to Psychology: Part 1	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4

## Western Culture Electives

Code	Title	Credits
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
PHL-102	Ethics	4
R-204	History of Christianity	4

## Optional

While not required for the AS degree, students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Oregon State University. The Bachelor of Science degree requires the completion of one course from each category below.

## Cultural Diversity Electives

Code	Title	Credits
ANT-232	Native Americans of North America	4
ENG-213	U.S. Latinx Literature	4
ENG-252	Hindu Mythology	4
GEO-110	Cultural & Human Geography	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-210	World Religions	4

## Difference, Power, and Discrimination Electives

Code	Title	Credits
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
SOC-225	Social Problems	4

## Physical Education Electives

Code	Title	Credits
HPE-295	Health & Fitness for Life	3

## Biology Emphasis, AS - with Oregon State University

**Program Code: AS.OSUBIOLOGY**

Students receiving an Associate of Science degree with an emphasis in Biology will be prepared to transfer into upper division courses to complete a Bachelor of Science degree in Biology. Courses establish the foundations in understanding cellular processes, evolution, ecology, plant and animal physiology and population studies.

For information contact Tory Blackwell, 503-594-3646 or [toryb@clackamas.edu](mailto:toryb@clackamas.edu), or Polly Schulz, 503-594-3358 or [pollys@clackamas.edu](mailto:pollys@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- communicate complex ideas by demonstrating an ability to gather and analyze data, construct evidence-based arguments and critically evaluate information;
- be able to apply critical thinking to address biological phenomena using scientific processes;
- demonstrate an understanding of the complexity and diversity of life;

- analyze and construct relationships between human activities and the environment;
- recognize the contributions of scientific knowledge in contributing to technological advances and advancing the human condition.

## Requirements

### First Year

Fall Term		Credits
BI-211	General Biology for Science Majors (Cellular Biology)	5
CH-221	General Chemistry	5
PE-185	Physical Education	1
WR-121Z	Composition I	4

**Credits** **15**

### Winter Term

BI-212	General Biology for Science Majors (Animal Biology)	5
CH-222	General Chemistry	5
MTH-251	Calculus I	5

**Credits** **15**

### Spring Term

BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
Select one of the following:		4
COMM-111Z	Public Speaking	
COMM-112	Persuasive Speaking	
COMM-218Z	Interpersonal Communication	
CH-223	General Chemistry	5

**Credits** **14**

### Second Year

#### Fall Term

CH-241	Organic Chemistry I <sup>1</sup>	5
PH-201	General Physics	5
or PH-211	or General Physics With Calculus	
WR-122Z	Composition II	4
or WR-227Z	or Technical Writing	

**Core Electives (p. 94)** 3-5

**Credits** **17-19**

#### Winter Term

CH-242	Organic Chemistry II <sup>1</sup>	5
MTH-252	Calculus II	5
PH-202	General Physics	5
or PH-212	or General Physics With Calculus	

**Credits** **15**

#### Spring Term

CH-243	Organic Chemistry III <sup>1</sup>	5
HPE-295	Health & Fitness for Life	3
PH-203	General Physics	5
or PH-213	or General Physics With Calculus	

**Core Electives (p. 94)** 3-5

**Credits** **16-18**

**Total Credits** **92-96**

<sup>1</sup> Organic Chemistry –satisfies degree requirement but does not transfer at 300 level credits unless student passes the American Chemical Society (ACS) organic exam. OSU highly recommends taking the ACS organic exam. Transfers as a combination of CH-331, CH-332, & CH-337

## Core Electives

Code	Title	Credits
ANT-101	Physical Anthropology	4
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
ART-101	Art Appreciation	3
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ASC-175	Integrated Science Inquiry	4
ASC-176	Integrated Science Inquiry	4
ASC-177	Integrated Science Inquiry	4
BI-101	General Biology; Cellular Biology	
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-234	Introductory Microbiology	
CH-104	Introductory Chemistry	5
CH-105	Introductory Chemistry	5
CH-114	Chemistry in Art	4
CH-221	General Chemistry	5
CH-222	General Chemistry	5
CH-223	General Chemistry	5
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-194	Introduction to Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4

Code	Title	Credits
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-240	Native American Mythology	4
ENG-241	Norse Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
G-101	General Geology	4
G-102	General Geology	4
G-103	General Geology	4
G-201	General Geology	4
G-202	General Geology	4
G-203	General Geology	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
GS-104	Earth System Science	4
GS-105	Earth System Science	4
GS-106	Earth System Science	4
GS-107	Astronomy	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
MUS-206	Music Literature: History of Rock	4
PH-121	Astronomy	4
PH-122	General Astronomy	4
PH-123	General Astronomy	4
PH-201	General Physics	5
PH-202	General Physics	5
PH-203	General Physics	5
PH-211	General Physics With Calculus	5
PH-212	General Physics With Calculus	5
PH-213	General Physics With Calculus	5
PHL-102	Ethics	4
PS-200	Introduction to Political Science	4
PS-201	American Government and Politics	4
PS-203	State and Local Governments	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PSY-200	Introduction to Psychology: Part 1	4

Code	Title	Credits
PSY-205	Introduction to Psychology: Part 2	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-204	History of Christianity	4
R-210	World Religions	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4
SOC-225	Social Problems	4
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## Careers

Career pathways include:

- pre-pharmacy
- pre-medical
- preveterinarian
- biological and zoology research fields
- wildlife and fisheries management
- wide range of related fields

## Biology Emphasis, AS - with Portland State University

**Program Code: AS.PSUBIOLOGY**

Students receiving an Associate of Science degree with an emphasis in Biology will be prepared to transfer into upper division courses to complete a Bachelor of Science degree in Biology. Courses establish the foundations in understanding cellular processes, evolution, ecology, plant and animal physiology and population studies.

For information contact Tory Blackwell, 503-594-3646 or [toryb@clackamas.edu](mailto:toryb@clackamas.edu), or Polly Schulz, 503-594-3358 or [pollys@clackamas.edu](mailto:pollys@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- communicate complex ideas by demonstrating an ability to gather and analyze data, construct evidence-based arguments and critically evaluate information;
- be able to apply critical thinking to address biological phenomena using scientific processes;
- demonstrate an understanding of the complexity and diversity of life;
- analyze and construct relationships between human activities and the environment;

- recognize the contributions of scientific knowledge in contributing to technological advances and advancing the human condition.

## Requirements

### First Year

		Credits
<b>Fall Term</b>		
BI-211	General Biology for Science Majors (Cellular Biology)	5
CH-221	General Chemistry	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>14</b>

### Winter Term

BI-212	General Biology for Science Majors (Animal Biology)	5
CH-222	General Chemistry	5
WR-122Z or WR-227Z	Composition II or Technical Writing	4
Core Electives (p. 96)		4
<b>Credits</b>		<b>18</b>

### Spring Term

BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
CH-223	General Chemistry	5
COMM-111Z or COMM-140	Public Speaking or Introduction to Intercultural Communication	4
<b>Credits</b>		<b>14</b>

### Second Year

#### Fall Term

CH-241	Organic Chemistry I	5
STAT-243Z or MTH-251	Elementary Statistics I or Calculus I	4-5
PH-201	General Physics	5
Core Electives (p. 96)		3
<b>Credits</b>		<b>17-18</b>

#### Winter Term

CH-242	Organic Chemistry II	5
MTH-244 or MTH-252	Statistics II or Calculus II	4-5
Core Electives (p. 96)		3
<b>Credits</b>		<b>12-13</b>

#### Spring Term

Select one of the following:		5-7
CH-243	Organic Chemistry III	
Science Electives (p. 96)		
General Education Science Electives (p. )		4-5
Core Electives (p. 96)		6
<b>Credits</b>		<b>15-18</b>
<b>Total Credits</b>		<b>90-95</b>

## Core Electives

Any General Education course in the respective distribution areas of Arts & Letters or Social Sciences listed in the AAOT (p. 47)

## Science Electives

Minimum 14 science elective credits

Code	Title	Credits
G-201	General Geology	4
G-202	General Geology	4
G-203	General Geology	4
PH-202	General Physics	5
PH-203	General Physics	5
CH-242	Organic Chemistry II (Recommended)	5
CH-243	Organic Chemistry III (Recommended)	5

## General Education Science Electives

Any general education science course in ASC (p. 250), BI (p. 253), CH (p. 259), ESR (p. 281), G (p. 289), GS (p. 287), PH (p. 322), Z (p. 337)

## Careers

Career pathways include:

- pre-pharmacy
- pre-medical
- preveterinarian
- biological and zoology research fields
- wildlife and fisheries management
- wide range of related fields

## Biology Emphasis, AS - with University of Oregon

Program Code: AS.UOBIOLOGY

Students receiving an Associate of Science degree with an emphasis in Biology will be prepared to transfer into upper division courses to complete a Bachelor of Science degree in Biology. Courses establish the foundations in understanding cellular processes, evolution, ecology, plant and animal physiology and population studies.

For information contact Tory Blackwell, 503-594-3646 or [toryb@clackamas.edu](mailto:toryb@clackamas.edu), or Polly Schulz, 503-594-3358 or [pollys@clackamas.edu](mailto:pollys@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- communicate complex ideas by demonstrating an ability to gather and analyze data, construct evidence-based arguments and critically evaluate information;
- be able to apply critical thinking to address biological phenomena using scientific processes;
- demonstrate an understanding of the complexity and diversity of life;
- analyze and construct relationships between human activities and the environment;
- recognize the contributions of scientific knowledge in contributing to technological advances and advancing the human condition.

## Requirements

### First Year

Fall Term		Credits
BI-211	General Biology for Science Majors (Cellular Biology)	5
CH-221	General Chemistry	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>14</b>

### Winter Term

BI-212	General Biology for Science Majors (Animal Biology)	5
CH-222	General Chemistry	5
WR-122Z	Composition II	4
<b>Credits</b>		<b>14</b>

### Spring Term

BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
CH-223	General Chemistry	5
CS-120 or STAT-243Z	Survey of Computing or Elementary Statistics I	4
Core Electives (p. 97)		4
<b>Credits</b>		<b>18</b>

### Second Year

#### Fall Term

CH-241	Organic Chemistry I	5
MTH-251	Calculus I	5
PH-201	General Physics	5
Core Electives (p. 97)		3
<b>Credits</b>		<b>18</b>

#### Winter Term

CH-242	Organic Chemistry II	5
MTH-252	Calculus II	5
PH-202	General Physics	5
<b>Credits</b>		<b>15</b>

#### Spring Term

CH-243	Organic Chemistry III	5
PH-203	General Physics	5
Core Electives (p. 97)		3
<b>Credits</b>		<b>13</b>
<b>Total Credits</b>		<b>92</b>

## Core Electives

Any General Education course in the respective distribution areas of Arts & Letters or Social Sciences listed in the [AAOT \(p. 47\)](#)

## Careers

Career pathways include:

- pre-pharmacy
- pre-medical
- preveterinarian
- biological and zoology research fields

- wildlife and fisheries management
- wide range of related fields

## Chemical Engineering Emphasis, AS - with Oregon State University

Program Code: AS.OSUCHEMENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

### First Year

Fall Term		Credits
COMM-111Z	Public Speaking	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>16</b>

### Winter Term

CH-221	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
WR-227Z	Technical Writing	4
<b>Credits</b>		<b>17</b>

### Spring Term

CH-222	General Chemistry	5
MTH-254	Vector Calculus	5
Social Processes Electives (p. 98)		4
<b>Credits</b>		<b>14</b>

### Summer Term

CH-223	General Chemistry	5
MTH-256	Differential Equations	4
<b>Credits</b>		<b>9</b>



**Second Year****Fall Term**

CH-241	Organic Chemistry I	5
ENGR-211	Statics	4
PH-211	General Physics With Calculus	5
<b>Credits</b>		<b>14</b>

**Winter Term**

CH-242	Organic Chemistry II	5
MTH-253	Calculus III	5
PH-212	General Physics With Calculus	5
<b>Credits</b>		<b>15</b>

**Spring Term**

CH-243	Organic Chemistry III	5
ENGR-201	Electrical Fundamentals	4
PH-213	General Physics With Calculus	5
Western Culture Electives (p. 98)		4
<b>Credits</b>		<b>18</b>
<b>Total Credits</b>		<b>103</b>

**Social Processes Electives**

Code	Title	Credits
ANT-103	Cultural Anthropology	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
PS-201	American Government and Politics	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PSY-200	Introduction to Psychology: Part 1	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4

**Western Culture Electives**

Code	Title	Credits
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4

Code	Title	Credits
ENG-205	British Literature: Romantic to Contemporary	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
PHL-102	Ethics	4
R-204	History of Christianity	4

**Optional**

While not required for the AS degree, students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Oregon State University. The Bachelor of Science degree requires the completion of one course from each category below.

**Biological Science Electives**

Code	Title	Credits
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-234	Introductory Microbiology	4
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

**Cultural Diversity Electives**

Code	Title	Credits
ANT-232	Native Americans of North America	4
ENG-213	U.S. Latinx Literature	4

Code	Title	Credits
ENG-252	Hindu Mythology	4
GEO-110	Cultural & Human Geography	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-210	World Religions	4

## Difference, Power, and Discrimination Electives

Code	Title	Credits
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
SOC-225	Social Problems	4

## Literature and the Arts Electives

Code	Title	Credits
ART-101	Art Appreciation	3
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-226	Popular Literature	4
ENG-230	Documentary Film	4
ENG-241	Norse Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-270	Introduction to Literary Criticism	4
MUS-105	Music Appreciation	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

## Physical Education Electives

Code	Title	Credits
HPE-295	Health & Fitness for Life	3

## Civil Engineering Emphasis, AS - with Oregon State University

Program Code: AS.OSUCIVILENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

### First Year

Fall Term		Credits
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>17</b>

### Winter Term

CDT-103	Computer-Aided Drafting I	3
CH-222	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
<b>Credits</b>		<b>16</b>

### Spring Term

COMM-111Z	Public Speaking	4
EC-201	Principles of Economics: Micro	4
MTH-254	Vector Calculus	5
WR-227Z	Technical Writing	4
<b>Credits</b>		<b>17</b>

### Summer Term

GIS-201	Introduction to Geographic Information Systems	3
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MTH-256	Differential Equations	4
<b>Credits</b>		<b>7</b>
<b>Second Year</b>		
<b>Fall Term</b>		
ENGR-211	Statics	4
MTH-253	Calculus III	5
PH-211	General Physics With Calculus	5
<b>Western Culture Electives (p. 100)</b>		<b>4</b>
<b>Credits</b>		<b>18</b>
<b>Winter Term</b>		
CS-161	Computer Science I	4
ENGR-212	Dynamics	4
PH-212	General Physics With Calculus	5
<b>Credits</b>		<b>13</b>
<b>Spring Term</b>		
ENGR-213	Strength of Materials	4
PH-213	General Physics With Calculus	5
<b>Literature and the Arts Electives (p. 100)</b>		<b>3-4</b>
<b>Credits</b>		<b>12-13</b>
<b>Total Credits</b>		<b>100-101</b>

## Literature and the Arts Elective

Code	Title	Credits
ART-101	Art Appreciation	3
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-226	Popular Literature	4
ENG-230	Documentary Film	4
ENG-241	Norse Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4

Code	Title	Credits
ENG-270	Introduction to Literary Criticism	4
MUS-105	Music Appreciation	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

## Western Culture Elective

Code	Title	Credits
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
PHL-102	Ethics	4
R-204	History of Christianity	4

## Optional

While not required for the AS degree, students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Oregon State University. The Bachelor of Science degree requires the completion of one course from each category below.

## Biological Science Electives

Code	Title	Credits
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4

Code	Title	Credits
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-234	Introductory Microbiology	4
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## Cultural Diversity Elective

Code	Title	Credits
ANT-232	Native Americans of North America	4
ENG-213	U.S. Latinx Literature	4
ENG-252	Hindu Mythology	4
GEO-110	Cultural & Human Geography	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-210	World Religions	4

## Difference, Power, and Discrimination Electives

Code	Title	Credits
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
SOC-225	Social Problems	4

## Civil Engineering Emphasis, AS - with Portland State University

Program Code: AS.PSUCIVILENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;

- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

### First Year

Fall Term		Credits
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>17</b>

### Winter Term

CH-222	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
<b>Credits</b>		<b>13</b>

### Spring Term

COMM-111Z	Public Speaking	4
MTH-254	Vector Calculus	5
WR-227Z	Technical Writing	4
<b>Arts &amp; Letters Electives (p. 102)</b>		<b>4</b>
<b>Credits</b>		<b>17</b>

### Second Year

#### Fall Term

ENGR-211	Statics	4
GIS-201	Introduction to Geographic Information Systems	3
PH-211	General Physics With Calculus	5
<b>Social Science Electives (p. 102)</b>		<b>4</b>
<b>Credits</b>		<b>16</b>

#### Winter Term

CDT-103	Computer-Aided Drafting I	3
ENGR-212	Dynamics	4
MTH-256	Differential Equations	4
PH-212	General Physics With Calculus	5
<b>Credits</b>		<b>16</b>

#### Spring Term

ENGR-213	Strength of Materials	4
MTH-261	Linear Algebra	4
PH-213	General Physics With Calculus	5
<b>Select one of the following:</b>		<b>3-4</b>

**Arts & Letters Electives (p. 102)**

**Social Science Electives (p. 102)**

<b>Credits</b>		<b>16-17</b>
<b>Total Credits</b>		<b>95-96</b>

## Arts & Letters Electives

All courses in [ASL](#) (p. 238), [COMM](#) (p. 260), [ENG](#) (p. 278), [FR](#) (p. 286), [GER](#) (p. 289), [HUM](#) (p. 298), [PHL](#) (p. 321), [SPN](#) (p. 328), [WR](#) (p. 335). Note that native speakers should only take advanced (300 level or above) world language courses

Non-performance based courses in art, journalism, music, and theater also meet this requirement:

Code	Title	Credits
ART-101	Art Appreciation	3
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
J-211	Mass Media & Society	4
MUS-105	Music Appreciation	3
MUS-141	Introduction to the Music Business	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-230	Music and Media: Sex, Drugs, Rock & Roll	4
TA-101	Appreciation of Theatre	4
TA-102	Appreciation of Theatre	4

## Social Science Electives

All courses in [ANT](#) (p. 238), [EC](#) (p. 272), [GEO](#) (p. 288), [HST](#) (p. 291), [PS](#) (p. 323), [PSY](#) (p. 325), [SOC](#) (p. 328), [SSC](#) (p. 327), and [WS](#) (p. 334).

## Recommended

Take [CE-211 Plane Surveying and Mapping](#) at PSU before beginning their junior year at PSU. Take one additional Arts & Letters or Social Science elective.

# Computer Engineering Emphasis, AS - with Portland State University

Program Code: AS.PSUCOMPENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;

- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

First Year		Credits
<b>Fall Term</b>		
CH-221	General Chemistry	5
CS-161	Computer Science I	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
<b>Credits</b>		<b>17</b>
<b>Winter Term</b>		
CS-162	Computer Science II	4
ENGR-112	Engineering Programming	3
ENGR-171	Digital Logic	4
MTH-252	Calculus II	5
<b>Credits</b>		<b>16</b>
<b>Spring Term</b>		
COMM-111Z	Public Speaking	4
ENGR-271	Digital Systems	4
MTH-261	Linear Algebra	4
WR-121Z	Composition I	4
<b>Credits</b>		<b>16</b>
<b>Summer Term</b>		
WR-122Z or WR-227Z	Composition II or Technical Writing	4
<b>Credits</b>		<b>4</b>
<b>Second Year</b>		
<b>Fall Term</b>		
ENGR-221	Electrical Circuit Analysis I	4
PH-211	General Physics With Calculus	5
<a href="#">Arts &amp; Letters Electives</a> (p. 102)		4
<b>Credits</b>		<b>13</b>
<b>Winter Term</b>		
ENGR-222	Electrical Circuit Analysis II	4
MTH-256	Differential Equations	4
PH-212	General Physics With Calculus	5
<a href="#">Social Science Electives</a> (p. 103)		4
<b>Credits</b>		<b>17</b>
<b>Spring Term</b>		
ENGR-223	Electrical Circuit Analysis III	4
MTH-253	Calculus III	5
PH-213	General Physics With Calculus	5
Select one of the following:		3-4
<a href="#">Arts &amp; Letters Electives</a> (p. 102)		
<a href="#">Social Science Electives</a> (p. 103)		
<b>Credits</b>		<b>17-18</b>
<b>Total Credits</b>		<b>100-101</b>

## Arts & Letters Electives

All courses in [ASL](#) (p. 238), [COMM](#) (p. 260), [ENG](#) (p. 278), [FR](#) (p. 286), [GER](#) (p. 289), [HUM](#) (p. 298), [PHL](#) (p. 321), [SPN](#)

(p. 328), WR (p. 335). Note that native speakers should only take advanced (300 level or above) world language courses.

Non-performance based courses in art, journalism, music, and theater also meet this requirement:

Code	Title	Credits
ART-101	Art Appreciation	3
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
J-211	Mass Media & Society	4
MUS-105	Music Appreciation	3
MUS-141	Introduction to the Music Business	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-230	Music and Media: Sex, Drugs, Rock & Roll	4
TA-101	Appreciation of Theatre	4
TA-102	Appreciation of Theatre	4

## Social Science Electives

All courses in [ANT \(p. 238\)](#), [EC \(p. 272\)](#), [GEO \(p. 288\)](#), [HST \(p. 291\)](#), [PS \(p. 323\)](#), [PSY \(p. 325\)](#), [SOC \(p. 328\)](#), [SSC \(p. 327\)](#), and [WS \(p. 334\)](#)

## Computer Science Emphasis, AS - with Portland State University

Program Code: AS.PSUCOMPSCI

An Associate of Science with an emphasis in Computer Science is a transfer degree intended to provide students with an overwhelming majority of the first two years' coursework required for a Bachelor of Science in Computer Science.

A degree in Computer Science is a degree in programming: creating new software applications. This is a high-demand, high-paying field that offers job security and ongoing growth as the number of computing devices and demand for sophisticated operating systems, web and productivity applications, and games increases. We encourage all students interested in this program to pursue a co-enrollment option with the university.

For information contact Jen Miller, 503-594-3138 or [jen.miller@clackamas.edu](mailto:jen.miller@clackamas.edu) (%20jen.miller@clackamas.edu), or Richard Albers, 503-594-3166 or [richa@clackamas.edu](mailto:richa@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- explain the software development lifecycle and the specific tools and processes used to create software;
- describe the components, purposes, and benefits of both structured and object-oriented programming paradigms and demonstrate the development of software using them in a high-level language;
- explain and demonstrate various ways information is stored and manipulated, at both a low and high level, in computer systems and software;

- employ mathematics and computing techniques in a system and rigorous manner to solve technical problems;
- exhibit good teamwork skills and serve as effective members of project teams.

## Requirements

First Year		Credits
<b>Fall Term</b>		
CS-160	Computer Science Orientation	4
CS-161	Computer Science I	4
MTH-251	Calculus I	5
		<b>Credits</b>
		<b>13</b>
<b>Winter Term</b>		
CS-162	Computer Science II	4
MTH-252	Calculus II	5
<a href="#">Science Electives (p. 104)</a>		4
		<b>Credits</b>
		<b>13</b>
<b>Spring Term</b>		
CS-140L	Linux for Programmers	4
CS-260	Data Structures	4
MTH-253	Calculus III	5
<a href="#">Race, Ethnicity, and Systemic Oppression Electives (p. 104)</a>		4
		<b>Credits</b>
		<b>17</b>
<b>Summer Term</b>		
COMM-111Z	Public Speaking	4
MTH-261	Linear Algebra	4
WR-121Z	Composition I	4
Select one of the following:		4
<a href="#">Arts &amp; Letters Elective (p. )</a>		
<a href="#">Social Science Electives (p. 104)</a>		
		<b>Credits</b>
		<b>16</b>
<b>Second Year</b>		
<b>Fall Term</b>		
Select one of the following:		5
BI-211	General Biology for Science Majors (Cellular Biology)	
CH-221	General Chemistry	
PH-211	General Physics With Calculus	
CS-205	System Programming and Architecture	4
Select one of the following:		4
<a href="#">Arts &amp; Letters Elective (p. )</a>		
<a href="#">Social Science Electives (p. 104)</a>		
		<b>Credits</b>
		<b>13</b>
<b>Winter Term</b>		
Select one of the following:		5
BI-212	General Biology for Science Majors (Animal Biology)	
CH-222	General Chemistry	
PH-212	General Physics With Calculus	
CS-250	Discrete Structures I	4
WR-227Z	Technical Writing	4
		<b>Credits</b>
		<b>13</b>



**Spring Term**

Select one of the following: 5

BI-213	General Biology for Science Majors (Plant Biology & Ecology)	
CH-223	General Chemistry	
PH-213	General Physics With Calculus	
CS-251	Discrete Structures II	4
<b>Computer Science Electives (p. 104)</b>		3-4
<b>Credits</b>		<b>12-13</b>
<b>Total Credits</b>		<b>97-98</b>

**Arts & Letters Electives**

Non-performance-based courses in the prefixes of: **ART** (p. 247), **J** (p. 299), **MUS** (p. 308), **TA** (p. 329)

Any 100 level or above course in the prefixes of: **ASL** (p. 238), **COMM** (p. 260), **ENG** (p. 278), **FR** (p. 286), **GER** (p. 289), **HUM** (p. 298), **PHL** (p. 321), **SPN** (p. 328), **WR** (p. 335)

Native speakers should only take advanced (300-level or above) world language courses.

**Social Science Electives**

Any 100-level or above in the prefixes of: **ANT** (p. 238), **EC** (p. 272), **GEO** (p. 288), **HST** (p. 291), **PS** (p. 323), **PSY** (p. 325), **SOC** (p. 328), **SSC** (p. 327), **WS** (p. 334)

**Race, Ethnicity, and Systemic Oppression Electives**

Code	Title	Credits
ES-211	Introduction to Latino/a/x Studies	4
ES-221	Introduction to Black Studies	4
ES-241	Introduction to Native American Studies	4

**Computer Science Electives**

Any **CS** (p. 261) course not already included in the program

**Science Electives**

Any General Education science course listed under prefixes: **BI** (p. 253), **CH** (p. 259), **ESR** (p. 281), **G** (p. 289), and **PH** (p. 322) in the **AAOT** (p. 47)

**Careers**

AS degrees are not designed to be direct-to-work credentials. Students completing a Bachelor of Science in Computer Science, depending upon internships and focused electives, would be qualified for a career in computer programming with possible job titles including, but not limited to:

- application developer
- game developer
- web developer

**Construction Engineering Management Emphasis, AS - with Oregon State University****Program Code: AS.OSUCONENRMGT**

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

**Outcomes****Program Outcomes**

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

**Requirements**

First Year		Credits
<b>Fall Term</b>		
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>17</b>
<b>Winter Term</b>		
BA-226	Business Law I	4
CDT-103	Computer-Aided Drafting I	3
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
<b>Credits</b>		<b>15</b>
<b>Spring Term</b>		
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
<b>Biological Science Electives (p. 105)</b>		4-5
<b>Literature and the Arts Electives (p. 105)</b>		3-4
<b>Credits</b>		<b>15-17</b>
<b>Second Year</b>		
<b>Fall Term</b>		
CS-161	Computer Science I	4
ENGR-211	Statics	4
HPE-295	Health & Fitness for Life	3

PH-211	General Physics With Calculus	5
<b>Credits</b>		<b>16</b>
<b>Winter Term</b>		
BA-OSU	Accounting for Decision Making	4
PH-212	General Physics With Calculus	5
PHL-102	Ethics	4
Cultural Diversity Electives (p. 105)		4
<b>Credits</b>		<b>17</b>
<b>Spring Term</b>		
COMM-111Z	Public Speaking	4
ENGR-213	Strength of Materials	4
ENGR-OSU	Engineering Economy	3
WR-227Z	Technical Writing	4
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>95-97</b>

## Biological Science Electives

Code	Title	Credits
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-234	Introductory Microbiology	4
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## Cultural Diversity Electives

Code	Title	Credits
ANT-232	Native Americans of North America	4
ENG-213	U.S. Latinx Literature	4
ENG-252	Hindu Mythology	4
GEO-110	Cultural & Human Geography	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-210	World Religions	4

## Literature and the Arts Electives

Code	Title	Credits
ART-101	Art Appreciation	3
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-226	Popular Literature	4
ENG-230	Documentary Film	4
ENG-241	Norse Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-270	Introduction to Literary Criticism	4
MUS-105	Music Appreciation	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

## Optional

While not required for the AS degree, students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Oregon State University. The Bachelor of Science degree requires the completion of one course from the category below.

## Difference, Power, and Discrimination Electives

Code	Title	Credits
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
SOC-225	Social Problems	4

# Ecological Engineering Emphasis, AS - with Oregon State University

Program Code: AS.OSUECOLENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

### First Year

Fall Term		Credits
COMM-111Z	Public Speaking	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>16</b>

### Winter Term

CH-221	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
<b>Literature and the Arts Electives (p. 106)</b>		<b>3-4</b>
<b>Credits</b>		<b>16-17</b>

### Spring Term

CH-222	General Chemistry	5
MTH-254	Vector Calculus	5
WR-227Z	Technical Writing	4
<b>Credits</b>		<b>14</b>

### Summer Term

CH-223	General Chemistry	5
MTH-256	Differential Equations	4
<b>Credits</b>		<b>9</b>

### Second Year

Fall Term		Credits
ENGR-211	Statics	4
PH-211	General Physics With Calculus	5

<b>Cultural Diversity Electives (p. 106)</b>	<b>4</b>
<b>Difference, Power, and Discrimination Electives (p. 106)</b>	<b>4</b>
<b>Credits</b>	<b>17</b>

### Winter Term

CS-161	Computer Science I	4
HPE-295	Health & Fitness for Life	3
MTH-253	Calculus III	5
PH-212	General Physics With Calculus	5
<b>Credits</b>		<b>17</b>

### Spring Term

ENGR-213	Strength of Materials	4
PH-213	General Physics With Calculus	5
PHL-102	Ethics	4
<b>Credits</b>		<b>13</b>
<b>Total Credits</b>		<b>102-103</b>

## Cultural Diversity Electives

Code	Title	Credits
ANT-232	Native Americans of North America	4
ENG-213	U.S. Latinx Literature	4
ENG-252	Hindu Mythology	4
GEO-110	Cultural & Human Geography	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-210	World Religions	4

## Difference, Power, and Discrimination Electives

Code	Title	Credits
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
SOC-225	Social Problems	4

## Literature and the Arts

Code	Title	Credits
ART-101	Art Appreciation	3
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4

Code	Title	Credits
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-226	Popular Literature	4
ENG-230	Documentary Film	4
ENG-241	Norse Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-270	Introduction to Literary Criticism	4
MUS-105	Music Appreciation	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

## Electrical Engineering Emphasis, AS - with Oregon Institute of Technology (Oregon Tech)

Program Code: AS.OITELECENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

### First Year

Fall Term		Credits
CH-221	General Chemistry	5
CS-161	Computer Science I	4
ENGR-111	Introduction to Engineering	3

MTH-251	Calculus I	5
<b>Credits</b>		<b>17</b>

### Winter Term

CH-222	General Chemistry	5
ENGR-112	Engineering Programming	3
ENGR-171	Digital Logic	4
MTH-252	Calculus II	5

**Credits** 17

### Spring Term

COMM-111Z	Public Speaking	4
ENGR-271	Digital Systems	4
MTH-261	Linear Algebra	4
WR-121Z	Composition I	4

**Credits** 16

### Summer Term

WR-227Z	Technical Writing	4
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**Social Science Electives (p. 107)** 3-4

**Credits** 7-8

### Second Year

#### Fall Term

ENGR-221	Electrical Circuit Analysis I	4
MTH-254	Vector Calculus	5
PH-211	General Physics With Calculus	5

Select one of the following: 3-4

**Humanities Electives (p. 107)**

**Social Science Electives (p. 107)**

**Credits** 17-18

#### Winter Term

ENGR-222	Electrical Circuit Analysis II	4
MTH-256	Differential Equations	4
PH-212	General Physics With Calculus	5
WR-122Z	Composition II	4

**Credits** 17

#### Spring Term

ENGR-223	Electrical Circuit Analysis III	4
MTH-253	Calculus III	5
PH-213	General Physics With Calculus	5

**Credits** 14

**Total Credits** 105-107

## HUMANITIES ELECTIVES

Any course from **ART** (p. 247), **ASL** (p. 238) (200-level), **ENG** (p. 278), **FR** (p. 286) (200-level), **GER** (p. 289) (200-level), **HUM** (p. 298), **MUS** (p. 308), **PHL** (p. 321), **R** (p. 325), **SPN** (p. 328) (200-level), **TA** (p. 329)

## Social Science Electives

Any course from **ANT** (p. 238), **EC** (p. 272), **GEO** (p. 288), **HST** (p. 291), **PS** (p. 323), **PSY** (p. 325), **SOC** (p. 328), **SSC** (p. 327), **WS** (p. 334)

## Optional

While not required for the AS degree, students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Institute of Technology and is listed below.

- COMM-219 Small Group Discussion
- Up to 9 additional Social Science Elective credits
- Up to 6 additional Humanities Elective credits

## Electrical Engineering Emphasis, AS - with Oregon State University

Program Code: AS.OSUELCOMPENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

### First Year

Fall Term		Credits
CS-161	Computer Science I	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>16</b>

### Winter Term

CH-221	General Chemistry	5
CS-162	Computer Science II	4
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
<b>Credits</b>		<b>17</b>

### Spring Term

CS-260	Data Structures	4
MTH-253	Calculus III	5
WR-227Z	Technical Writing	4

<b>Social Processes Electives (p. 108)</b>		<b>4</b>
<b>Credits</b>		<b>17</b>
<b>Summer Term</b>		
COMM-111Z	Public Speaking	4
MTH-256	Differential Equations	4
<b>Credits</b>		<b>8</b>
<b>Second Year</b>		
<b>Fall Term</b>		
ENGR-221	Electrical Circuit Analysis I	4
MTH-254	Vector Calculus	5
PH-211	General Physics With Calculus	5
<b>Credits</b>		<b>14</b>
<b>Winter Term</b>		
ENGR-171	Digital Logic	4
ENGR-222	Electrical Circuit Analysis II	4
MTH-231	Elements of Discrete Mathematics	4
PH-212	General Physics With Calculus	5
<b>Credits</b>		<b>17</b>
<b>Spring Term</b>		
ENGR-223	Electrical Circuit Analysis III	4
PH-213	General Physics With Calculus	5
<b>Western Culture Electives (p. 108)</b>		<b>4</b>
<b>Credits</b>		<b>13</b>
<b>Total Credits</b>		<b>102</b>

## Social Processes Electives

Code	Title	Credits
ANT-103	Cultural Anthropology	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
PS-201	American Government and Politics	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PSY-200	Introduction to Psychology: Part 1	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4

## Western Culture Electives

Code	Title	Credits
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-107	World Literature: Ancient Through Classical Times	4

Code	Title	Credits
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
PHL-102	Ethics	4
R-204	History of Christianity	4

## Optional

While not required for the AS degree, students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Oregon State University. The Bachelor of Science degree requires the completion of one course from each category below.

## Biological Science Electives

Code	Title	Credits
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-234	Introductory Microbiology	4
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
Z-201	General Zoology	4

Code	Title	Credits
Z-202	General Zoology	4
Z-203	General Zoology	4

## Cultural Diversity Electives

Code	Title	Credits
ANT-232	Native Americans of North America	4
ENG-213	U.S. Latinx Literature	4
ENG-252	Hindu Mythology	4
GEO-110	Cultural & Human Geography	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-210	World Religions	4

## Difference, Power, and Discrimination Electives

Code	Title	Credits
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
SOC-225	Social Problems	4

## Literature and the Arts Electives

Code	Title	Credits
ART-101	Art Appreciation	3
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-226	Popular Literature	4
ENG-230	Documentary Film	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4



Code	Title	Credits
ENG-260	Introduction to Women Writers	4
MUS-105	Music Appreciation	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

## Physical Education Electives

Code	Title	Credits
HPE-295	Health & Fitness for Life	3

# Electrical Engineering Emphasis, AS - with Portland State University

Program Code: AS.PSUELECTENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

### First Year

Fall Term		Credits
CH-221	General Chemistry	5
CS-161	Computer Science I	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
<b>Credits</b>		<b>17</b>

### Winter Term

CS-162	Computer Science II	4
ENGR-112	Engineering Programming	3
ENGR-171	Digital Logic	4
MTH-252	Calculus II	5
<b>Credits</b>		<b>16</b>

### Spring Term

COMM-111Z	Public Speaking	4
ENGR-271	Digital Systems	4
MTH-261	Linear Algebra	4

WR-121Z	Composition I	4
<b>Credits</b>		<b>16</b>

### Summer Term

WR-122Z or WR-227Z	Composition II or Technical Writing	4
<b>Credits</b>		<b>4</b>

### Second Year

#### Fall Term

ENGR-221	Electrical Circuit Analysis I	4
MTH-254	Vector Calculus	5
PH-211	General Physics With Calculus	5
<b>Arts &amp; Letters Electives (p. 110)</b>		<b>4</b>
<b>Credits</b>		<b>18</b>

#### Winter Term

ENGR-222	Electrical Circuit Analysis II	4
MTH-256	Differential Equations	4
PH-212	General Physics With Calculus	5
<b>Social Science Electives (p. 111)</b>		<b>4</b>
<b>Credits</b>		<b>17</b>

#### Spring Term

ENGR-223	Electrical Circuit Analysis III	4
MTH-253	Calculus III	5
PH-213	General Physics With Calculus	5
Select one of the following:		3-4

**Arts & Letters Electives (p. 110)**

**Social Science Electives (p. 111)**

**Credits 17-18**

**Total Credits 105-106**

## Arts & Letters Electives

All courses in [ASL \(p. 238\)](#), [COMM \(p. 260\)](#), [ENG \(p. 278\)](#), [FR \(p. 286\)](#), [GER \(p. 289\)](#), [HUM \(p. 298\)](#), [PHL \(p. 321\)](#), [SPN \(p. 328\)](#), [WR \(p. 335\)](#). Note that native speakers should only take advanced (300 level or above) world language courses.

Non-performance based courses in art, journalism, music, and theater also meet this requirement:

Code	Title	Credits
ART-101	Art Appreciation	3
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
J-211	Mass Media & Society	4
MUS-105	Music Appreciation	3
MUS-141	Introduction to the Music Business	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-230	Music and Media: Sex, Drugs, Rock & Roll	4
TA-101	Appreciation of Theatre	4
TA-102	Appreciation of Theatre	4

## Social Science Electives

All courses in [ANT](#) (p. 238), [EC](#) (p. 272), [GEO](#) (p. 288), [HST](#) (p. 291), [PS](#) (p. 323), [PSY](#) (p. 325), [SOC](#) (p. 328), [SSC](#) (p. 327), and [WS](#) (p. 334)

## English Emphasis, AS - with Portland State University

Program Code: AS.PSUENGLISH

The Associate of Science degree with an emphasis in English is for students interested in transferring to Oregon State University, Portland State University, or University of Oregon to complete a bachelor's degree with an emphasis in Literature, Creative Writing, and Publishing.

For information contact Amanda Coffey, 503-594-3257 or [amandac@clackamas.edu](mailto:amandac@clackamas.edu)

## Outcomes Program Outcomes

Upon successful completion of this program, students should be able to:

- identify research methods appropriate for specific topics;
- interpret and analyze a variety of texts based on close reading and analysis;
- construct sound academic arguments that prove an understanding of rhetorical conventions and diverse audiences;
- rewrite and edit work after reflection upon peer and instructor feedback;
- collaborate with peers on writing projects and presentations.
- complete a short play, screenplay, series of poems, collection of creative nonfiction pieces, compilation of short stories, and/or text for a graphic novel;
- demonstrate an understanding of independent publishing and production;
- discover and/or create opportunities for professional publishing and production.

## Requirements

### First Year

Fall Term	Credits
Select one of the following:	4
ASL-101 First-Year American Sign Language I	
FR-101 First-Year French I	
SPN-101 First-Year Spanish I	
ENG-201 Shakespeare	4
or ENG-204 or British Literature: Ancient to Enlightenment	
Select one of the following:	4-5
MTH-105Z Math in Society	
MTH-111Z Precalculus I: Functions	
MTH-112Z Precalculus II: Trigonometry	
MTH-251 Calculus I	
MTH-252 Calculus II	

WR-121Z	Composition I	4
<b>Credits</b>		<b>16-17</b>

### Winter Term

Select one of the following:		4
ASL-102	First-Year American Sign Language II	
FR-102	First-Year French II	
SPN-102	First-Year Spanish II	
Select one of the following:		4
ENG-202	Shakespeare	
ENG-205	British Literature: Romantic to Contemporary	
ENG-253	American Literature: Pre-Columbian to Civil War	
WR-122Z	Composition II	4
<b>Social Science Electives</b> (p. 112)		3-4
<b>Credits</b>		<b>15-16</b>

### Spring Term

Select one of the following:		4
ASL-103	First-Year American Sign Language III	
FR-103	First-Year French III	
SPN-103	First-Year Spanish III	
ENG-270	Introduction to Literary Criticism	4
WR-222 or WR-240	English Composition or Creative Nonfiction Writing I	4
<b>Science Electives</b> (p. 112)		4-5
<b>Credits</b>		<b>16-17</b>

### Second Year

<b>Fall Term</b>		
Select one of the following:		4
ASL-201	Second-Year American Sign Language I	
FR-201	Second-Year French I	
SPN-201	Second-Year Spanish I	
WR-248	Bookmaking: Design and Layout	4
Select one of the following:		4
WR-140	Introduction to Writing Creatively	
<b>200-Level Creative Writing Electives</b> (p. 112)		
<b>Social Science Electives</b> (p. 112)		3-4
<b>Credits</b>		<b>15-16</b>

### Winter Term

Select one of the following:		4
ASL-202	Second-Year American Sign Language II	
FR-202	Second-Year French II	
SPN-202	Second-Year Spanish II	
WR-241 or WR-242	Fiction Writing I or Poetry Writing I	4
WR-246	Editing & Publishing	4
WR-265	Digital Storytelling	4
<b>Credits</b>		<b>16</b>

### Spring Term

Select one of the following:		4
ASL-203	Second-Year American Sign Language III	
FR-203	Second-Year French III	
SPN-203	Second-Year Spanish III	

ENG-297	A.S. Degree Portfolio	1
Select one of the following:		4
WR-244	Fiction Writing II	
WR-245	Poetry Writing II	
WR-247	Playwriting II	
WR-263	Screenwriting II	
English Electives (p. 112)		8
<b>Credits</b>		<b>17</b>
<b>Total Credits</b>		<b>95-99</b>

## 200-Level Creative Writing Electives

Code	Title	Credits
WR-240	Creative Nonfiction Writing I	4
WR-241	Fiction Writing I	4
WR-243	Playwriting I	4
WR-262	Introduction to Screenwriting	4

## English Electives

Code	Title	Credits
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-116	Introduction to Literature: Comics	4
ENG-121	Mystery Fiction	4
ENG-130	Leadership in Literature	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-213	U.S. Latinx Literature	4
ENG-218	Arthurian Literature	4
ENG-225	Creative Nonfiction Literature	4
ENG-226	Popular Literature	4
ENG-230	Documentary Film	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-254	American Literature: 1865 to Present	4.00000
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-261	Literature of Science Fiction	4
ENG-295	Revolutionary Film	4
WR-268	Creative Nonfiction Writing II: Nature Writing	4
WR-270	Creative Nonfiction Writing II: Food Writing	4

## Science Electives

Code	Title	Credits
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4

Code	Title	Credits
BI-112	General Biology for Health Sciences	4
BI-234	Introductory Microbiology	4
CH-104	Introductory Chemistry	5
CH-105	Introductory Chemistry	5
CH-106	Introductory Chemistry	5
CH-150	Preparatory Chemistry	4
CH-221	General Chemistry	5
CH-222	General Chemistry	5
CH-223	General Chemistry	5
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
G-201	General Geology	4
G-202	General Geology	4
G-203	General Geology	4
PH-121	Astronomy	4
PH-122	General Astronomy	4
PH-123	General Astronomy	4
PH-201	General Physics	5
PH-202	General Physics	5
PH-203	General Physics	5
PH-211	General Physics With Calculus	5
PH-212	General Physics With Calculus	5
PH-213	General Physics With Calculus	5

## Social Science Electives

Code	Title	Credits
ANT-102	Archaeology & Prehistory	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
PS-200	Introduction to Political Science	4
PS-203	State and Local Governments	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PSY-101	Human Relations	3
PSY-205	Introduction to Psychology: Part 2	4
SOC-204	Introduction to Sociology	4
WS-101	Introduction to Women's Studies	4

## Careers

English majors graduate with the ability to analyze the words of others, think both critically and creatively, research ideas and argue important positions, and organize their own thoughts into effective and articulate forms from web content to grant applications, business proposals to novels. Because of these skills, the National Association of Colleges

and Employers has ranked English as one of the top-paying liberal arts majors, with average starting salaries above \$50,000, and often rising much higher in the ten years after graduating.

Where can a degree in English take you? The employment opportunities that accompany an English major are myriad. One obvious example is the field of publishing. But English majors rarely stop at the obvious. Their skills apply equally well to the fields of public relations, marketing, advertising, and copywriting. In a business setting, English majors often find success as communications managers, web developers, researchers, project leaders, or administrators. If you want your words to reach the lives of others, English might guide you to the areas of journalism, law, government, and public policy. For those who truly love filling a blank page, English can lead into creative writing, speech writing, professional blogging, or technical writing. And the careers of professional writer, librarian, and teacher are ideal if you find that your love of English is uncontainable and must be shared

## Environmental Engineering Emphasis, AS - with Oregon State University

Program Code: AS.OSUENVIRENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

### Outcomes

#### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

### Requirements

#### First Year

Fall Term		Credits
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>17</b>

#### Winter Term

BI-204	Elementary Microbiology	4
CH-222	General Chemistry	5
ENGR-112	Engineering Programming	3

MTH-252	Calculus II	5
<b>Credits</b>		<b>17</b>

#### Spring Term

CH-223	General Chemistry	5
ENGR-115	Engineering Graphics	3
MTH-254	Vector Calculus	5
WR-227Z	Technical Writing	4

**Credits** 17

#### Summer Term

COMM-111Z	Public Speaking	4
MTH-256	Differential Equations	4

**Credits** 8

#### Second Year

##### Fall Term

ENGR-211	Statics	4
PH-211	General Physics With Calculus	5
Literature and the Arts Electives (p. 113)		3-4
Social Processes Electives (p. 113)		4

**Credits** 16-17

##### Winter Term

ENGR-212	Dynamics	4
PH-212	General Physics With Calculus	5
Western Culture Electives (p. 114)		4

**Credits** 13

##### Spring Term

ENGR-213	Strength of Materials	4
MTH-253	Calculus III	5
PH-213	General Physics With Calculus	5
Cultural Diversity Electives (p. 113)		4

**Credits** 18

**Total Credits** 106-107

### Cultural Diversity Electives

Code	Title	Credits
ANT-232	Native Americans of North America	4
ENG-213	U.S. Latinx Literature	4
ENG-252	Hindu Mythology	4
GEO-110	Cultural & Human Geography	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-210	World Religions	4

### Literature and the Arts Electives

Code	Title	Credits
ART-101	Art Appreciation	3
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4

Code	Title	Credits	Code	Title	Credits
ENG-106	Introduction to Literature: Poetry	4	ENG-107	World Literature: Ancient Through Classical Times	4
ENG-107	World Literature: Ancient Through Classical Times	4	ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4	ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-109	World Literature: The 19th through 21st Centuries	4	ENG-201	Shakespeare	4
ENG-194	Introduction to Film	4	ENG-202	Shakespeare	4
ENG-195	American Film	4	ENG-204	British Literature: Ancient to Enlightenment	4
ENG-201	Shakespeare	4	ENG-205	British Literature: Romantic to Contemporary	4
ENG-202	Shakespeare	4	ENG-250	Greek Mythology	4
ENG-204	British Literature: Ancient to Enlightenment	4	ENG-251	Celtic Mythology	4
ENG-205	British Literature: Romantic to Contemporary	4	ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-213	U.S. Latinx Literature	4	ENG-254	American Literature: 1865 to Present	4
ENG-226	Popular Literature	4	ENG-255	American Literature: Topics in American Literature	4
ENG-230	Documentary Film	4	GEO-208	Geography of the United States & Canada	4
ENG-250	Greek Mythology	4	HST-101	History of Western Civilization	4
ENG-251	Celtic Mythology	4	HST-102	History of Western Civilization	4
ENG-252	Hindu Mythology	4	HST-103	History of Western Civilization	4
ENG-253	American Literature: Pre-Columbian to Civil War	4	HST-132	History of Language and the Written Word in Western Civilization	4
ENG-254	American Literature: 1865 to Present	4	HST-201	History of the United States	4
ENG-255	American Literature: Topics in American Literature	4	HST-202	History of the United States	4
ENG-260	Introduction to Women Writers	4	HST-203	History of the United States	4
MUS-105	Music Appreciation	3	PHL-102	Ethics	4
MUS-205	Music Literature: History of Jazz	4	R-204	History of Christianity	4
MUS-206	Music Literature: History of Rock	4			

## Social Processes Electives

Code	Title	Credits
ANT-103	Cultural Anthropology	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
PS-201	American Government and Politics	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PSY-200	Introduction to Psychology: Part 1	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4

## Western Culture Electives

Code	Title	Credits
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4

## Optional

While not required for the AS degree, students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Oregon State University. The Bachelor of Science degree requires the completion of one course from the category below.

## Biological Science Electives

Code	Title	Credits
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-234	Introductory Microbiology	4
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
Z-201	General Zoology	4

Code	Title	Credits
Z-202	General Zoology	4
Z-203	General Zoology	4

## Difference, Power, and Discrimination Electives

Code	Title	Credits
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
SOC-225	Social Problems	4

## Physical Education Electives

Code	Title	Credits
HPE-295	Health & Fitness for Life	3

## Environmental Engineering Emphasis, AS - with Portland State University

Program Code: AS.PSUENVIRENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

First Year		
Fall Term		Credits
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>17</b>
Winter Term		
BI-204	Elementary Microbiology	4
CH-222	General Chemistry	5

ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
<b>Credits</b>		<b>17</b>

### Spring Term

COMM-111Z	Public Speaking	4
MTH-254	Vector Calculus	5
WR-227Z	Technical Writing	4
<b>Arts &amp; Letters Electives (p. 115)</b>		<b>4</b>
<b>Credits</b>		<b>17</b>

### Second Year

#### Fall Term

ENGR-211	Statics	4
GIS-201	Introduction to Geographic Information Systems	3
PH-211	General Physics With Calculus	5
<b>Social Science Electives (p. 116)</b>		<b>4</b>
<b>Credits</b>		<b>16</b>

#### Winter Term

CDT-103	Computer-Aided Drafting I	3
ENGR-212	Dynamics	4
MTH-256	Differential Equations	4
PH-212	General Physics With Calculus	5
<b>Credits</b>		<b>16</b>

#### Spring Term

ENGR-213	Strength of Materials	4
MTH-261	Linear Algebra	4
PH-213	General Physics With Calculus	5
Select one of the following:		3-4

**Arts & Letters Electives (p. 115)**

**Social Science Electives (p. 116)**

**Credits 16-17**

**Total Credits 99-100**

## Arts & Letters Electives

All courses in [ASL \(p. 238\)](#), [COMM \(p. 260\)](#), [ENG \(p. 278\)](#), [FR \(p. 286\)](#), [GER \(p. 289\)](#), [HUM \(p. 298\)](#), [PHL \(p. 321\)](#), [SPN \(p. 328\)](#), [WR \(p. 335\)](#). Note that native speakers should only take advanced (300 level or above) world language courses

Non-performance based courses in art, journalism, music, and theater also meet this requirement:

Code	Title	Credits
ART-101	Art Appreciation	3
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
J-211	Mass Media & Society	4
MUS-105	Music Appreciation	3
MUS-141	Introduction to the Music Business	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-230	Music and Media: Sex, Drugs, Rock & Roll	4



Code	Title	Credits
TA-101	Appreciation of Theatre	4
TA-102	Appreciation of Theatre	4

## Social Science Electives

All courses in [ANT](#) (p. 238), [EC](#) (p. 272), [GEO](#) (p. 288), [HST](#) (p. 291), [PS](#) (p. 323), [PSY](#) (p. 325), [SOC](#) (p. 328), [SSC](#) (p. 327), and [WS](#) (p. 334).

## Recommended

Take one additional Arts & Letters or Social Science elective.

# Geology Emphasis, AS - with Portland State University

Program Code: AS.PSUGEOLOGY

The Associate of Science with an emphasis in Geology prepares students to complete a Bachelor of Science degree in Geology. Courses establish the foundations in understanding of plate tectonics, geologic time, rock and mineral systems, rock and mineral identification, seismology, fossil formation, surface processes, map reading and geologic structures.

For information contact Sarah Hoover, 503-594-3354 or [sarah@clackamas.edu](mailto:sarah@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- assess geological environments and explain human impact on the environment, hazards associated with them and how these hazards affect society;
- use geologic tools to gather, assess, interpret and explain data relative to a geologic setting, tools include: rocks and minerals, maps, fossils compasses and GPS;
- communicate complex ideas by demonstrating an ability to gather and analyze data, construct evidence-based arguments and critically evaluate information;
- demonstrate an understanding of the basic principles that guide the science of geology, these include: plate tectonics, Earth's structure, seismology, rock and mineral formation, rock and mineral identification, fossil formation, geologic time and dating, surface processes, and Earth's history.

## Requirements

### First Year

Fall Term		Credits
COMM-111Z	Public Speaking	4
G-201	General Geology & G-201L General Geology Lab	4
MTH-095 or placement in MTH-111Z <sup>1</sup>		
WR-121Z	Composition I	4
<b>Credits</b>		<b>12</b>

### Winter Term

CS-120	Survey of Computing	4
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G-202	General Geology & G-202L General Geology Lab	4
MTH-111Z	Precalculus I: Functions	4
WR-122Z	Composition II	4
<b>Credits</b>		<b>16</b>

### Spring Term

G-203	General Geology & G-203L General Geology Lab	4
MTH-112Z	Precalculus II: Trigonometry	4
<b>General Elective</b> (p. 116)		3-4
<b>Credits</b>		<b>11-12</b>

### Summer Term Option

G-145 or G-148		
<b>Credits</b>		<b>0</b>

### Second Year

#### Fall Term

MTH-251	Calculus I	5
PH-201	General Physics	5
<b>Social Science General Education Elective</b> (p. 117)		4
Select one of the following: <sup>2</sup>		4
<b>General Elective</b> (p. 116)		
CH-150	Preparatory Chemistry	
<b>Credits</b>		<b>18</b>

#### Winter Term

CH-221	General Chemistry	5
MTH-252	Calculus II	5
<b>Social Science General Education Elective</b> (p. 117)		4
<b>General Elective</b> (p. 116) <sup>3</sup>		3-4
<b>Credits</b>		<b>17-18</b>

#### Spring Term

CH-222	General Chemistry	5
COMM-140	Introduction to Intercultural Communication	4
STAT-243Z	Elementary Statistics I	4
<b>General Elective (if not taken summer term)</b> (p. 116)		3-4
<b>Credits</b>		<b>16-17</b>
<b>Total Credits</b>		<b>90-93</b>

## General Electives

Any 3-4 credit course 100 level or above

Recommended courses that would complement upper division courses at Portland State University include:

Code	Title	Credits
MTH-253	Calculus III	5
MTH-256	Differential Equations	4

World Languages: [ASL](#) (p. 238), [FR](#) (p. 286), [GER](#) (p. 289), [SPN](#) (p. 328)

[GIS](#) (p. 287) Courses

<sup>1</sup> MTH-095 Algebra III does not count toward the degree

<sup>2</sup> Take CH-150 Preparatory Chemistry if needed to meet requisites for CH-221 General Chemistry

<sup>3</sup> BI-165D Natural History of the Western Deserts recommended if summer courses not taken

## Social Science Electives

Any Social Science General Education course as listed in the AAOT (p. 47)

Recommended:

Code	Title	Credits
ANT-101	Physical Anthropology	4
ANT-102	Archaeology & Prehistory	4
GEO-100	Introduction to Physical Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4
PS-297	Introduction to Environmental Politics	4

## Careers

Career opportunities include:

- Working with federal, state, and local governments as well as private companies focusing on such things as:
  - environmental geology
  - volcanology
  - paleontology
  - water resources
  - earthquakes
  - flooding
  - mineral resources
  - geochemistry
  - landslides
  - hazard mitigation

## Horticulture Emphasis, AS - with Oregon State University

Program Code: AS.OSUGENHORT

Students receiving an Associate of Science with an emphasis in horticulture will be prepared to transfer into upper division courses to complete a Bachelor of Science degree in General Horticulture to Oregon State University. Courses establish a foundation in chemistry, biology and horticulture science/practices.

For information contact April Chastain, Horticulture Advisor, 503-594-3055 or [april.chastain@clackamas.edu](mailto:april.chastain@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- communicate complex ideas by demonstrating an ability to gather and analyze data, construct evidence-based arguments and critically evaluate information;

- demonstrate an understanding of how horticulture integrates with contemporary social and environmental issues;
- apply critical thinking to assess a horticulture system: diagnose problems and recommend solutions;
- identify common woody and herbaceous plants in the landscape.

## Requirements

### First Year

Fall Term		Credits
CH-221	General Chemistry	5
HOR-226	Plant Identification/Fall <sup>1</sup>	4
WR-121Z	Composition I	4
<b>Horticulture Production &amp; Management Electives (p. 118)</b>		2-3
<b>Credits</b>		<b>15-16</b>
Winter Term		
CH-222	General Chemistry	5
MTH-111Z	Precalculus I: Functions	4
WR-122Z or WR-227Z	Composition II or Technical Writing	4
<b>Horticulture Production &amp; Management Electives (p. 118)</b>		2-3
<b>Credits</b>		<b>15-16</b>

### Spring Term

CH-223	General Chemistry	5
HOR-112	Horticulture Career Exploration	2
HOR-228	Plant Identification/Spring <sup>1</sup>	4
HPE-295	Health & Fitness for Life	3
<b>Horticulture Production &amp; Management Electives (p. 118)</b>		2-3
<b>Credits</b>		<b>16-17</b>

### Second Year

Fall Term		Credits
BI-211	General Biology for Science Majors (Cellular Biology)	5
<b>Difference, Power, and Discrimination Electives (p. 118)</b>		4
<b>Literature and the Arts Electives (p. 118)</b>		3-4
<b>Credits</b>		<b>12-13</b>

### Winter Term

BI-212	General Biology for Science Majors (Animal Biology)	5
MTH-112Z	Precalculus II: Trigonometry	4
<b>Cultural Diversity Electives (p. 118)</b>		4
<b>Social Processes and Institutions Electives (p. 118)</b>		4
<b>Credits</b>		<b>17</b>

### Spring Term

BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
COMM-111Z or COMM-218Z	Public Speaking or Interpersonal Communication	4
HOR-215	Herbaceous Perennials	3
<b>Western Culture Electives (p. 118)</b>		4
<b>Credits</b>		<b>16</b>

**Total Credits 91-95**

<sup>1</sup> HOR-227 Plant Identification/Winter may be substituted for HOR-226 Plant Identification/Fall or HOR-228 Plant Identification/Spring. See Horticulture advisor for other possible substitutions

## Cultural Diversity Electives<sup>2</sup>

Code	Title	Credits
ENG-213	U.S. Latinx Literature	4
GEO-110	Cultural & Human Geography	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4

## Difference, Power, and Discrimination Electives<sup>2</sup>

Code	Title	Credits
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
SOC-225	Social Problems	4

## Literature and the Arts Electives<sup>2</sup>

Code	Title	Credits
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
MUS-105	Music Appreciation	3

## Social Processes and Institutions Electives<sup>2</sup>

Code	Title	Credits
EC-201	Principles of Economics: Micro	4
HST-103	History of Western Civilization	4
PHL-102	Ethics	4
PS-201	American Government and Politics	4
PS-205	International Relations	4
PSY-200	Introduction to Psychology: Part 1	4
SOC-206	Institutions & Social Change	4

## Western Culture Electives<sup>2</sup>

Code	Title	Credits
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
PHL-102	Ethics	4

## Horticulture Production & Management Electives

Code	Title	Credits
HOR-123	Landscape Maintenance	3
HOR-124	Food Harvest	3
HOR-224	Landscape Installation	3
HOR-225	Arboriculture I	3
HOR-231	Irrigation Design	3
HOR-236	Insect Identification	2
HOR-237	Disease Identification	2
HOR-240	Irrigation Practices	3
HOR-246	Organic Farming and Gardening	2

## Notes

<sup>2</sup> OSU requires students to complete one course in each category with no more than two courses in the same subject. Other options available post-transfer. Work with OSU advisor for course selection.

## Industrial/Manufacturing Engineering Emphasis, AS - with Oregon State University

Program Code: AS.OSUINDMFGENG

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

First Year		
Fall Term		Credits
COMM-111Z	Public Speaking	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5

WR-121Z	Composition I	4
<b>Credits</b>		<b>16</b>
<b>Winter Term</b>		
CH-221	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
<b>Credits</b>		<b>13</b>
<b>Spring Term</b>		
CH-222	General Chemistry	5
ENGR-115	Engineering Graphics	3
MTH-254	Vector Calculus	5
WR-227Z	Technical Writing	4
<b>Credits</b>		<b>17</b>
<b>Summer Term</b>		
MTH-256	Differential Equations	4
<b>Social Processes Elective (p. 119)</b>		<b>4</b>
<b>Credits</b>		<b>8</b>
<b>Second Year</b>		
<b>Fall Term</b>		
ENGR-211	Statics	4
PH-211	General Physics With Calculus	5
<b>Western Culture Elective (p. 119)</b>		<b>4</b>
<b>Credits</b>		<b>13</b>
<b>Winter Term</b>		
CS-161	Computer Science I	4
ENGR-212	Dynamics	4
PH-212	General Physics With Calculus	5
<b>Literature and the Arts Elective (p. 119)</b>		<b>3-4</b>
<b>Credits</b>		<b>16-17</b>
<b>Spring Term</b>		
ENGR-201	Electrical Fundamentals	4
ENGR-213	Strength of Materials	4
HPE-295	Health & Fitness for Life	3
PH-213	General Physics With Calculus	5
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>99-100</b>

## Literature and the Arts Electives

Code	Title	Credits
ART-101	Art Appreciation	3
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-194	Introduction to Film	4

Code	Title	Credits
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-226	Popular Literature	4
ENG-230	Documentary Film	4
ENG-241	Norse Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-270	Introduction to Literary Criticism	4
MUS-105	Music Appreciation	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

## Social Processes Electives

Code	Title	Credits
ANT-103	Cultural Anthropology	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
PS-201	American Government and Politics	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PSY-200	Introduction to Psychology: Part 1	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4

## Western Culture Electives

Code	Title	Credits
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4

Code	Title	Credits
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
PHL-102	Ethics	4
R-204	History of Christianity	4

## Optional

While not required for the AS degree, students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Oregon State University. The Bachelor of Science degree requires the completion of one course from each category below.

## Biological Science Electives

Code	Title	Credits
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-234	Introductory Microbiology	4
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## Cultural Diversity Electives

Code	Title	Credits
ANT-232	Native Americans of North America	4
ENG-213	U.S. Latinx Literature	4
ENG-252	Hindu Mythology	4
GEO-110	Cultural & Human Geography	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-210	World Religions	4

## Difference, Power, and Discrimination Electives

Code	Title	Credits
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
SOC-225	Social Problems	4

## Mechanical Engineering Emphasis, AS - with Oregon Institute of Technology (Oregon Tech)

**Program Code:** AS.OITMECHENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

First Year		
Fall Term		Credits
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5

WR-121Z	Composition I	4
<b>Credits</b>		<b>17</b>
<b>Winter Term</b>		
CH-222	General Chemistry	5
ENGR-231	Properties of Materials	4
MTH-252	Calculus II	5
WR-122Z	Composition II	4
<b>Credits</b>		<b>18</b>
<b>Spring Term</b>		
COMM-111Z	Public Speaking	4
ENGR-112	Engineering Programming	3
MTH-254	Vector Calculus	5
WR-227Z	Technical Writing	4
<b>Credits</b>		<b>16</b>
<b>Summer Term</b>		
MTH-256	Differential Equations	4
MTH-261	Linear Algebra	4
<b>Credits</b>		<b>8</b>
<b>Second Year</b>		
<b>Fall Term</b>		
ENGR-211	Statics	4
PH-211	General Physics With Calculus	5
Social Science Electives (p. 121)		3-4
<b>Credits</b>		<b>12-13</b>
<b>Winter Term</b>		
CDT-103	Computer-Aided Drafting I	3
ENGR-212	Dynamics	4
PH-212	General Physics With Calculus	5
Humanities Elective (p. 121)		3-4
<b>Credits</b>		<b>15-16</b>
<b>Spring Term</b>		
EC-201 or EC-202	Principles of Economics: Micro or Principles of Economics: Macro	4
ENGR-201	Electrical Fundamentals	4
ENGR-213	Strength of Materials	4
PH-213	General Physics With Calculus	5
<b>Credits</b>		<b>17</b>
<b>Total Credits</b>		<b>103-105</b>

## Social Science Electives

Choose courses from the following subjects: [ANT \(p. 238\)](#), [EC \(p. 272\)](#), [GEO \(p. 288\)](#), [HST \(p. 291\)](#), [PS \(p. 323\)](#), [PSY \(p. 325\)](#), [SOC \(p. 328\)](#), [SSC \(p. 327\)](#), [WS \(p. 334\)](#)

## Humanities Electives

Choose courses from the following subjects: [ART \(p. 247\)](#), [ASL \(p. 238\)](#) (200-level), [ENG \(p. 278\)](#), [FR \(p. 286\)](#) (200-level), [GER \(p. 289\)](#) (200-level), [HUM \(p. 298\)](#), [MUS \(p. 308\)](#), [PHL \(p. 321\)](#), [R \(p. 325\)](#), [SPN \(p. 328\)](#) (200-level), [TA \(p. 329\)](#)

## Optional

While not required for the AS degree, students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Institute of Technology and is listed below.

- COMM-219 Small Group Discussion
- WLD-150 Welding Processes
- Additional Social Science Elective

## Mechanical Engineering Emphasis, AS - with Oregon State University

**Program Code: AS.OSUSMECHENGR**

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

### First Year

Fall Term		Credits
COMM-111Z	Public Speaking	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>16</b>

### Winter Term

CH-221	General Chemistry	5
EC-201 or EC-202	Principles of Economics: Micro or Principles of Economics: Macro	4
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
<b>Credits</b>		<b>17</b>

### Spring Term

CH-222	General Chemistry	5
ENGR-115	Engineering Graphics	3
MTH-254	Vector Calculus	5



WR-227Z	Technical Writing	4
<b>Credits</b>		<b>17</b>
<b>Summer Term</b>		
MTH-256	Differential Equations	4
<b>Credits</b>		<b>4</b>
<b>Second Year</b>		
<b>Fall Term</b>		
ENGR-211	Statics	4
ENGR-221	Electrical Circuit Analysis I	4
PH-211	General Physics With Calculus	5
Western Culture Elective (p. 122)		4
<b>Credits</b>		<b>17</b>
<b>Winter Term</b>		
CS-161	Computer Science I	4
ENGR-212	Dynamics	4
ENGR-222	Electrical Circuit Analysis II	4
PH-212	General Physics With Calculus	5
<b>Credits</b>		<b>17</b>
<b>Spring Term</b>		
ENGR-213	Strength of Materials	4
PH-213	General Physics With Calculus	5
Literature and the Arts Elective (p. 122)		3-4
<b>Credits</b>		<b>12-13</b>
<b>Total Credits</b>		<b>100-101</b>

## Literature and the Arts Electives

Code	Title	Credits
ART-101	Art Appreciation	3
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-104	Introduction to Literature: Fiction	4
ENG-105	Introduction to Literature: Drama	4
ENG-106	Introduction to Literature: Poetry	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-194	Introduction to Film	4
ENG-195	American Film	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-213	U.S. Latinx Literature	4
ENG-226	Popular Literature	4
ENG-230	Documentary Film	4
ENG-241	Norse Mythology	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-252	Hindu Mythology	4

Code	Title	Credits
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
ENG-260	Introduction to Women Writers	4
ENG-270	Introduction to Literary Criticism	4
MUS-105	Music Appreciation	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

## Western Culture Electives

Code	Title	Credits
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ENG-107	World Literature: Ancient Through Classical Times	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4
ENG-109	World Literature: The 19th through 21st Centuries	4
ENG-201	Shakespeare	4
ENG-202	Shakespeare	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG-205	British Literature: Romantic to Contemporary	4
ENG-250	Greek Mythology	4
ENG-251	Celtic Mythology	4
ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG-254	American Literature: 1865 to Present	4
ENG-255	American Literature: Topics in American Literature	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
PHL-102	Ethics	4
R-204	History of Christianity	4

## Optional

While not required for the AS degree, students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Oregon State University. The Bachelor of Science degree requires the completion of one course from each category below.

## Biological Science Electives

Code	Title	Credits
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4

Code	Title	Credits
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-234	Introductory Microbiology	4
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
Z-201	General Zoology	4
Z-202	General Zoology	4
Z-203	General Zoology	4

## Cultural Diversity Electives

Code	Title	Credits
ANT-232	Native Americans of North America	4
ENG-213	U.S. Latinx Literature	4
ENG-252	Hindu Mythology	4
GEO-110	Cultural & Human Geography	4
R-101	Judaism and Foundations of Religion	4
R-102	Christianity and Islam	4
R-103	Asian Religions	4
R-210	World Religions	4

## Difference, Power, and Discrimination Electives

Code	Title	Credits
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
SOC-225	Social Problems	4

## Physical Education Electives

Code	Title	Credits
HPE-295	Health & Fitness for Life	3

## Mechanical Engineering Emphasis, AS - with Portland State University

Program Code: AS.PSUMECHENGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

### First Year

Fall Term		Credits
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>17</b>

### Winter Term

CH-222	General Chemistry	5
ENGR-112	Engineering Programming	3
ENGR-231	Properties of Materials	4
MTH-252	Calculus II	5
<b>Credits</b>		<b>17</b>

### Spring Term

COMM-111Z	Public Speaking	4
ENGR-115	Engineering Graphics	3
MTH-254	Vector Calculus	5
Select one of the following:		4

Arts & Letters Elective (p. 124)

Social Science Electives (p. 124)

**Credits** **16**

### Second Year

#### Fall Term

ENGR-211	Statics	4
MTH-261	Linear Algebra	4
PH-211	General Physics With Calculus	5
Arts & Letters Elective (p. 124)		4
<b>Credits</b>		<b>17</b>

#### Winter Term

ENGR-212	Dynamics	4
MTH-256	Differential Equations	4
PH-212	General Physics With Calculus	5
Social Science Elective (p. 124)		4
<b>Credits</b>		<b>17</b>

#### Spring Term

ENGR-201	Electrical Fundamentals	4
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ENGR-213	Strength of Materials	4
PH-213	General Physics With Calculus	5
Select one of the following:		3-4
Arts & Letters Elective (p. 124)		
Social Science Elective (p. 124)		
<b>Credits</b>		<b>16-17</b>
<b>Total Credits</b>		<b>100-101</b>

## Arts & Letters Electives

All courses in [ASL](#) (p. 238), [COMM](#) (p. 260), [ENG](#) (p. 278), [FR](#) (p. 286), [GER](#) (p. 289), [HUM](#) (p. 298), [PHL](#) (p. 321), [SPN](#) (p. 328), [WR](#) (p. 335). Note that native speakers should only take advanced (300 level or above) world language courses.

Non-performance based courses in art, journalism, music, and theater also meet this requirement:

Code	Title	Credits
ART-101	Art Appreciation	3
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
J-211	Mass Media & Society	4
MUS-105	Music Appreciation	3
MUS-141	Introduction to the Music Business	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-230	Music and Media: Sex, Drugs, Rock & Roll	4
TA-101	Appreciation of Theatre	4
TA-102	Appreciation of Theatre	4

## Social Science Electives

All courses in [ANT](#) (p. 238), [EC](#) (p. 272), [GEO](#) (p. 288), [HST](#) (p. 291), [PS](#) (p. 323), [PSY](#) (p. 325), [SOC](#) (p. 328), [SSC](#) (p. 327), and [WS](#) (p. 334)

## Optional

While not required for the AS degree, mechanical engineering students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Portland State University.

Additional courses include (1) One additional Arts & Letters or Social Science elective and (2) Approved Science Elective: Any minimum 4 credit course from [BI](#) (p. 253), [CH](#) (p. 259), [ESR](#) (p. 281), [GEO](#) (p. 288), or [PH](#) (p. 322).

# Music Emphasis, AS - with Portland State University

**Program Code: AS.PSUMUSIC**

The Associate of Science with an emphasis in music is for students interested in transferring into a bachelor's degree program at Portland State University. Students will be prepared to transfer into upper division courses to complete a bachelor of music degree. Courses establish the

foundations in understanding of music theory, aural skills, keyboard skills, ensemble playing, music performance and music technology.

For information contact Lars Campbell, 503-594-3384 or [lars.campbell@clackamas.edu](mailto:lars.campbell@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- communicate understanding of the inner workings of musical compositions, relating to theory, form, range, and emotional impact;
- demonstrate proficiency with performance of musical instrument, utilizing standard performance practice of multiple eras and styles;
- use industry software to notate musical examples;
- demonstrate an understanding of the basic principles that guide music, these include: recognition of musical building blocks (pitch, rhythm, intervals, scales, etc.), basic level of keyboard proficiency, four-part composition, analysis of musical examples.

## Requirements

### First Year

Fall Term	Credits
Select one of the following:	1-2

MUP-102	Wind Ensemble	
MUP-105	Jazz Ensemble	
MUP-122	Chamber Choir	
MUP-141	College Orchestra	

Select one of the following:<sup>1</sup> 2

MUP-171 - MUP-191 Individual Lessons		
MUP-171J - MUP-191J Individual Lessons: Jazz		
MUS-111	Music Theory I	3
MUS-111L	Music Notation Software I	1
MUS-114	Aural Skills I	2
MUS-127	Keyboard Skills I	2
MUS-189	Performance & Repertoire	1
WR-121Z	Composition I	4

**Credits** **16-17**

### Winter Term

Select one of the following: 1-2

MUP-102	Wind Ensemble	
MUP-105	Jazz Ensemble	
MUP-122	Chamber Choir	
MUP-141	College Orchestra	

Select one of the following:<sup>1</sup> 2

MUP-171 - MUP-191 Individual Lessons		
MUP-171J - MUP-191J Individual Lessons: Jazz		
MUS-112	Music Theory I	3
MUS-112L	Music Notation Software I	1
MUS-115	Aural Skills I	2
MUS-128	Keyboard Skills I	2
MUS-189	Performance & Repertoire	1

Select one of the following: 4-5

MTH-105Z	Math in Society	
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MTH-111Z	Precalculus I: Functions	
MTH-112Z	Precalculus II: Trigonometry	
MTH-251	Calculus I	
MTH-252	Calculus II	

**Credits** **16-18**

### Spring Term

Select one of the following: 1-2

MUP-102	Wind Ensemble	
MUP-105	Jazz Ensemble	
MUP-122	Chamber Choir	
MUP-141	College Orchestra	

Select one of the following:<sup>1</sup> 2

MUP-171 - MUP-191	Individual Lessons	
MUP-171J - MUP-191J	Individual Lessons: Jazz	

MUS-113	Music Theory I	3
MUS-113L	Music Notation Software I	1
MUS-116	Aural Skills I	2
MUS-129	Keyboard Skills I	2
MUS-189	Performance & Repertoire	1
WR-122Z	Composition II	4

**Credits** **16-17**

### Second Year

#### Fall Term

Select one of the following: 1-2

MUP-202	Wind Ensemble	
MUP-205	Jazz Ensemble	
MUP-222	Chamber Choir	
MUP-241	College Orchestra	

Select one of the following:<sup>1</sup> 2

MUP-271 - MUP-291		
MUP-271J - MUP-291J		

MUS-189	Performance & Repertoire	1
MUS-211	Music Theory II	3
MUS-214	Keyboard Skills II	2
MUS-224	Aural Skills II	2

**Arts & Letters Elective (p. 125)** 4

**Credits** **15-16**

#### Winter Term

Select one of the following: 1-2

MUP-202	Wind Ensemble	
MUP-205	Jazz Ensemble	
MUP-222	Chamber Choir	
MUP-241	College Orchestra	

Select one of the following:<sup>1</sup> 2

MUP-271 - MUP-291		
MUP-271J - MUP-291J		

MUS-189	Performance & Repertoire	1
MUS-212	Music Theory II	3
MUS-215	Keyboard Skills II	2
MUS-225	Aural Skills II	2

**Social Science Elective (p. 126)** 4

**Science/Math/Computer Science Elective (p. 126)** 3

**Credits** **18-19**

### Spring Term

Select one of the following: 1-2

MUP-202	Wind Ensemble	
MUP-205	Jazz Ensemble	
MUP-222	Chamber Choir	
MUP-241	College Orchestra	

Select one of the following:<sup>1</sup> 2

MUP-271 - MUP-291		
MUP-271J - MUP-291J		

MUS-189 Performance & Repertoire 1

MUS-213 Music Theory II 3

MUS-216 Keyboard Skills II 2

MUS-226 Aural Skills II 2

**Arts & Letters Elective (p. 125)** 4

**Science/Math/Computer Science Elective (p. 126)** 4

**Credits** **19-20**

**Total Credits** **100-107**

<sup>1</sup> Lessons must be in same instrument discipline, but may be in different styles.

Note: For students pursuing a jazz degree, MUP-104 Pep Band/Combo-Impro or MUP-204 Pep Band/Combo-Impro may be substituted for MUS-189 Performance & Repertoire.

## Arts & Letters Electives

Code	Title	Credits
ART-101	Art Appreciation	3
ART-115	Basic Design: 2-Dimensional Design	4
ART-117	Basic Design: 3-Dimensional Composition	4
ART-131	Introduction to Drawing	4
ART-204	History of Art/Ancient Through Medieval	4
ART-205	History of Art/Romanesque Through Baroque	4
ART-206	History of Art/Enlightenment Through Contemporary	4
ART-225	Computer Graphics I	3
ART-226	Computer Graphics II	3
ART-227	Computer Graphics III	3
ART-250	Ceramics/Beginning	4
ART-251	Ceramics/Hand-Building I	4
ART-252	Ceramics/Wheel-Throwing I	4
ART-253	Ceramics/Intermediate	4
ART-254	Ceramics/Hand-Building II	4
ART-255	Ceramics/Wheel-Throwing II	4
ART-281	Painting: Still Life/Beginning	4
ART-282	Painting: The Figure/Beginning	4
ART-283	Painting: Landscapes/Beginning	4
ART-284	Painting: Still Life/Intermediate	4
ART-285	Painting: The Figure/Intermediate	4
ART-286	Painting: Landscapes/Intermediate	4
ART-291	Sculpture	4

Code	Title	Credits	Code	Title	Credits
ART-292	Sculpture (Figure Emphasis)	4	MUS-112	Music Theory I	3
ART-293	Sculpture (Metal Emphasis)	4	MUS-113	Music Theory I	3
ASL-201	Second-Year American Sign Language I	4	MUS-205	Music Literature: History of Jazz	4
ASL-202	Second-Year American Sign Language II	4	MUS-206	Music Literature: History of Rock	4
ASL-203	Second-Year American Sign Language III	4	MUS-211	Music Theory II	3
COMM-126	Introduction to Gender Communication	4	MUS-212	Music Theory II	3
COMM-140	Introduction to Intercultural Communication	4	MUS-213	Music Theory II	3
COMM-212	Mass Media & Society	4	PHL-101	Philosophical Problems	4
COMM-218Z	Interpersonal Communication	4	PHL-102	Ethics	4
COMM-219	Small Group Discussion	4	PHL-103	Critical Reasoning	4
COMM-227	Nonverbal Communication	4	PHL-205	Moral Issues	4
ENG-104	Introduction to Literature: Fiction	4	PHL-210	Philosophy of Religion	4
ENG-105	Introduction to Literature: Drama	4	SPN-201	Second-Year Spanish I	4
ENG-106	Introduction to Literature: Poetry	4	SPN-202	Second-Year Spanish II	4
ENG-107	World Literature: Ancient Through Classical Times	4	SPN-203	Second-Year Spanish III	4
ENG-108	World Literature: Early Middle Ages through the 18th Century	4	TA-101	Appreciation of Theatre	4
ENG-109	World Literature: The 19th through 21st Centuries	4	TA-102	Appreciation of Theatre	4
ENG-116	Introduction to Literature: Comics	4	TA-103	Appreciation of Theatre	4
ENG-121	Mystery Fiction	4	TA-141	Acting I	4
ENG-130	Leadership in Literature	4	TA-142	Acting II	4
ENG-195	American Film	4	TA-143	Acting III	4
ENG-201	Shakespeare	4	WR-241	Fiction Writing I	4
ENG-202	Shakespeare	4	WR-242	Poetry Writing I	4
ENG-204	British Literature: Ancient to Enlightenment	4	WR-243	Playwriting I	4
ENG-205	British Literature: Romantic to Contemporary	4	WR-244	Fiction Writing II	4
ENG-213	U.S. Latinx Literature	4	WR-245	Poetry Writing II	4
ENG-218	Arthurian Literature	4	WR-248	Bookmaking: Design and Layout	4
ENG-226	Popular Literature	4	WR-262	Introduction to Screenwriting	4
ENG-240	Native American Mythology	4	WR-263	Screenwriting II	4
ENG-241	Norse Mythology	4	WR-265	Digital Storytelling	4
ENG-243	African Mythology	4	WR-270	Creative Nonfiction Writing II: Food Writing	4
ENG-250	Greek Mythology	4			
ENG-251	Celtic Mythology	4			
ENG-252	Hindu Mythology	4			
ENG-253	American Literature: Pre-Columbian to Civil War	4			
ENG-254	American Literature: 1865 to Present	4			
ENG-270	Introduction to Literary Criticism	4			
FR-201	Second-Year French I	4			
FR-202	Second-Year French II	4			
FR-203	Second-Year French III	4			
FR-211	Intermediate French Conversation	3			
HUM-160	Faith & Reason	4			
HUM-235	Perspectives on Terrorism	4			
HUM-240	American Military Conflict: Wars of National Identity	4			
HUM-241	American Military Conflict: Global War	4			
HUM-242	American Military Conflict: Asymmetric Warfare	4			
J-211	Mass Media & Society	4			
MUS-105	Music Appreciation	3			
MUS-111	Music Theory I	3			

## Science/Math/Computer Science Electives

Code	Title	Credits
ASC-175	Integrated Science Inquiry	4
ASC-176	Integrated Science Inquiry	4
ASC-177	Integrated Science Inquiry	4
BI-101	General Biology; Cellular Biology	4
BI-102	General Biology; Animal Systems	4
BI-103	General Biology; Plants & The Ecosystem	4
BI-112	General Biology for Health Sciences	4
BI-160	Bird Identification & Taxonomy	3
BI-160L	Bird Identification & Taxonomy with Lab	4
BI-165C	Natural History of the Oregon Coast	3
BI-165CL	Natural History of the Oregon Coast with Lab	4
BI-165D	Natural History of the Western Deserts	4
BI-175	Integrated Science Inquiry	4
BI-176	Integrated Science Inquiry	4
BI-177	Integrated Science Inquiry	4
BI-204	Elementary Microbiology	4

Code	Title	Credits
BI-211	General Biology for Science Majors (Cellular Biology)	5
BI-212	General Biology for Science Majors (Animal Biology)	5
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
BI-231	Human Anatomy & Physiology I	4
BI-232	Human Anatomy & Physiology II	4
BI-233	Human Anatomy & Physiology III	4
BI-234	Introductory Microbiology	4
CH-104	Introductory Chemistry	5
CH-105	Introductory Chemistry	5
CH-106	Introductory Chemistry	5
CH-112	Chemistry for Health Sciences	4
CH-114	Chemistry in Art	4
CH-221	General Chemistry	5
CH-222	General Chemistry	5
CH-223	General Chemistry	5
ESR-171	Introduction to Environmental Science	4
ESR-172	Introduction to Climate Change	4
ESR-173	Introduction to Sustainability	4
G-101	General Geology	4
G-102	General Geology	4
G-103	General Geology	4
G-148	Volcanoes & Earthquakes	4
G-201	General Geology	4
G-202	General Geology	4
G-203	General Geology	4
GS-104	Earth System Science	4
GS-105	Earth System Science	4
GS-106	Earth System Science	4
GS-107	Astronomy	4
MTH-211	Fundamentals of Elementary Math I	4
MTH-212	Fundamentals of Elementary Math II	4
MTH-213	Fundamentals of Elementary Math III	4
MTH-244	Statistics II	4
MTH-252	Calculus II <sup>1</sup>	5
MTH-253	Calculus III	5
MTH-254	Vector Calculus	5
MTH-256	Differential Equations	4
MTH-261	Linear Algebra	4
PH-121	Astronomy	4
PH-122	General Astronomy	4
PH-123	General Astronomy	4
PH-201	General Physics	5
PH-202	General Physics	5
PH-203	General Physics	5
PH-211	General Physics With Calculus	5
PH-212	General Physics With Calculus	5
PH-213	General Physics With Calculus	5
STAT-243Z	Elementary Statistics I	4
Z-201	General Zoology	4

Code	Title	Credits
Z-202	General Zoology	4
Z-203	General Zoology	4

<sup>1</sup> May be used as an elective requirement in this category if it has not already used for the mathematics requirement in this AS degree

## Social Science Electives

Code	Title	Credits
ANT-101	Physical Anthropology	4
ANT-102	Archaeology & Prehistory	4
ANT-103	Cultural Anthropology	4
ANT-232	Native Americans of North America	4
CJA-101	Criminology	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
GEO-100	Introduction to Physical Geography	4
GEO-110	Cultural & Human Geography	4
GEO-130	Introduction to Environmental Geography	4
GEO-208	Geography of the United States & Canada	4
HST-101	History of Western Civilization	4
HST-102	History of Western Civilization	4
HST-103	History of Western Civilization	4
HST-130	Oddballs and Outcasts in Western Civilization	4
HST-131	History of Crime & Punishment in Western Civilization	4
HST-132	History of Language and the Written Word in Western Civilization	4
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4
HST-137	History of Science, Medicine, & Technology in Western Civilization	4
HST-138	History of Love, Marriage and the Family In Western Civilization	4
HST-201	History of the United States	4
HST-202	History of the United States	4
HST-203	History of the United States	4
PS-200	Introduction to Political Science	4
PS-201	American Government and Politics	4
PS-203	State and Local Governments	4
PS-204	Introduction to Comparative Politics	4
PS-205	International Relations	4
PS-225	Introduction to Political Ideologies	4
PS-297	Introduction to Environmental Politics	4
PSY-200	Introduction to Psychology: Part 1	4
PSY-205	Introduction to Psychology: Part 2	4
PSY-215	Introduction to Developmental Psychology	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-231	Introduction to Human Sexuality	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification & Social Systems	4
SOC-206	Institutions & Social Change	4
SOC-210	Marriage, Family, & Intimate Relations	4



Code	Title	Credits
SOC-225	Social Problems	4
SSC-160	Faith & Reason	4
SSC-235	Perspectives on Terrorism	4
SSC-240	American Military Conflict: Wars of National Identity	4
SSC-241	American Military Conflict: Global War	4
SSC-242	American Military Conflict: Asymmetric Warfare	4
WS-101	Introduction to Women's Studies	4

## Careers

Career opportunities include:

- music performance
- composition
- music education
- jazz studies
- a wide range of related fields

# Renewable Energy Engineering Emphasis, AS - with Oregon Institute of Technology (Oregon Tech)

Program Code: AS.OITRNWNRGNGR

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to Portland State University, Oregon State University, or Oregon Tech (Oregon Institute of Technology).

For information contact Eric Lee, 503-594-6163 or [elee@clackamas.edu](mailto:elee@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the fundamental elements of engineering design;
- employ mathematics, science, and computing techniques in a systematic and rigorous manner to support the study and solution of engineering problems;
- conduct and document laboratory experiments in the sciences and engineering, effectively communicating determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

### First Year

Fall Term		Credits
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121Z	Composition I	4
<b>Credits</b>		<b>17</b>

Winter Term		
CH-222	General Chemistry	5
COMM-111Z	Public Speaking	4
MTH-252	Calculus II	5
Humanities Elective (p. 128)		3-4
<b>Credits</b>		<b>17-18</b>

Spring Term		
EC-201	Principles of Economics: Micro	4
or EC-202	or Principles of Economics: Macro	
MTH-261	Linear Algebra	4
WR-227Z	Technical Writing	4
Humanities Elective (p. 128)		3-4
<b>Credits</b>		<b>15-16</b>

Second Year		
Fall Term		
ENGR-211	Statics	4
ENGR-221	Electrical Circuit Analysis I	4
MTH-254	Vector Calculus	5
PH-211	General Physics With Calculus	5
<b>Credits</b>		<b>18</b>

Winter Term		
ENGR-222	Electrical Circuit Analysis II	4
MTH-256	Differential Equations	4
PH-212	General Physics With Calculus	5
WR-122Z	Composition II	4
<b>Credits</b>		<b>17</b>

Spring Term		
ENGR-223	Electrical Circuit Analysis III	4
PH-213	General Physics With Calculus	5
Social Science Elective (p. 128)		3-4
Social Science Elective (p. 128)		3-4
<b>Credits</b>		<b>15-17</b>
<b>Total Credits</b>		<b>99-103</b>

## Humanities Electives

Choose courses from the following subjects: [ART \(p. 247\)](#), [ASL \(p. 238\)](#) (200-level), [ENG \(p. 278\)](#), [FR \(p. 286\)](#) (200-level), [GER \(p. 289\)](#) (200-level), [HUM \(p. 298\)](#), [MUS \(p. 308\)](#), [PHL \(p. 321\)](#), [R \(p. 325\)](#), [SPN \(p. 328\)](#) (200-level), [TA \(p. 329\)](#)

## SOCIAL SCIENCE ELECTIVES

Choose courses from the following subjects: [ANT \(p. 238\)](#), [EC \(p. 272\)](#), [GEO \(p. 288\)](#), [HST \(p. 291\)](#), [PS \(p. 323\)](#), [PSY \(p. 325\)](#), [SOC \(p. 328\)](#), [SSC \(p. 327\)](#), [WS \(p. 334\)](#)

## Optional

While not required for the AS degree, students may complete additional coursework at CCC that will meet requirements for the Bachelor of Science degree at Institute of Technology and is listed below.

- COMM-219 Small Group Discussion
- Up to 3 additional Social Science Elective credits from the list above
- Up to 6 additional Humanities Elective credits from the list above

# ASSOCIATE OF APPLIED SCIENCE (AAS)

Associate of Applied Science degrees are career technical in nature and are intended primarily to lead students directly to employment in a specific career. Occupational licensure, career advancement and further study at a four-year college or university are additional opportunities for students earning an AAS degree. Associate of Applied Science degrees are awarded to students who complete the requirements of a specified, two-year career and technical program and are offered in a number of interest areas (see [Degree Programs \(p. 38\)](#)).

## Requirements

- Complete a minimum of 90 credits
- Establish a cumulative 2.0 GPA at CCC
- Establish residency by earning a minimum of 25% of the credits at CCC
- Complete one course from each of the [Related Instruction \(p. \)](#) areas
- See [Degree and Certificate Information & Requirements \(p. 38\)](#) for additional general requirements for all degrees and certificates
- Specific discipline requirements are listed on each program page

## Accounting, AAS

**Program Code:** AAS.ACCNTG

This program emphasizes developing an advanced understanding of accounting principles, analytical skills and the capacity to solve problems. Students should have the ability to reason, read with comprehension and compute math applications. The objective of this program is to prepare students for a professional career within a focus area of accounting by building both technical and soft skills.

The program is not designed to lead to a traditional four-year business administration degree. For students interested in pursuing a bachelor's degree, this program articulates to a Bachelor of Applied Science in Technology and Management at Oregon Tech.

## Oregon Tech Transfer Courses

The Business Department, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelor of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Dr. Joan San-Claire, [joan.san-claire@clackamas.edu](mailto:joan.san-claire@clackamas.edu)

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or higher
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 1 course - BA-285 Human Relations in Business
- Engage in ethical communication processes that accomplish goals

#### Physical Education/Health/Safety/First Aid

- 1 credit - See [Related Instruction \(p. \)](#) for course list
- Use effective life skills to improve and maintain mental and physical wellbeing

## Program Outcomes

Upon successful completion of this program, students should be able to:

- organize, analyze, record, and report financial events by applying the principles, standards, and practices of general, financial, managerial, cost, income tax, payroll, and governmental and nonprofit accounting;
- capably use basic business and accounting computerized tools and systems;
- comprehend overall business environments and influences on financial situations, such as economic, environmental, or legislative events;
- develop critical, ethical, and analytical problem-solving skills to inform operational planning, decision making, and continuous improvement using costing systems, budgeting, performance evaluation, and forecasting.

## Requirements

### First Year

Fall Term		Credits
BA-101	Introduction to Business	4
BA-111	General Accounting I	3
BA-131	Introduction to Business Computing	4
MTH-050	Technical Mathematics I <sup>1</sup>	4
<b>Credits</b>		<b>15</b>

### Winter Term

BA-112	General Accounting II	4
BA-177	Payroll Accounting	3
CS-135S	Microsoft Excel	3
WR-121Z	Composition I	4
<a href="#">PE/Health/Safety/First Aid requirement (p. )</a>		1
<b>Credits</b>		<b>15</b>

### Spring Term

BA-205	Business Communications With Technology	4
BA-211	Financial Accounting	4
BA-285	Human Relations in Business	4
EC-201	Principles of Economics: Micro	4
<b>Credits</b>		<b>16</b>

**Second Year**

**Fall Term**

BA-213	Decision Making With Accounting Information	4
BA-218	Personal Finance	4
BA-226	Business Law I	4
WR-227Z	Technical Writing	4
<b>Credits</b>		<b>16</b>

**Winter Term**

BA-216	Cost Accounting	4
BA-256	Income Tax Accounting	4
<b>Electives (p. 130)</b>		<b>6</b>
<b>Credits</b>		<b>14</b>

**Spring Term**

BA-217	Budgeting for Managers	3
BA-228	Computerized Accounting	3
BA-240	Introduction to Financial Management	4
BA-255	Governmental and Nonprofit Accounting	4
<b>Credits</b>		<b>14</b>
<b>Total Credits</b>		<b>90</b>

<sup>1</sup> or higher, based on advising placement. Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty or academic advisor for the transfer requirements of the specific advanced program or school.

**Electives**

Any [BA \(p. 255\)](#), [BT \(p. 258\)](#), [CS \(p. 261\)](#), or [EC \(p. 272\)](#) course not included in the program, or FYE-101 First Year Experience Level I, MTH-105Z Math in Society, STAT-243Z Elementary Statistics I, or LIB-101 Introduction to Library Research

**Careers**

Career opportunities include:

- GSI Accountant I
- bookkeeper
- payroll
- accounts receivable or payable
- financial staff accountant
- financial analyst
- cost accountant
- tax preparer

**Administrative Professional, AAS**

**Program Code:** AAS.ADMINPRO

This program provides a strong foundation of office and technology skills and courses in business administration, with an emphasis on critical thinking and human relations skills. The program includes Related Instruction requirements, industry standard computer programs and more advanced business administration courses.

For information contact Beverly Forney, 503-594-3115 or [beverlyf@clackamas.edu](mailto:beverlyf@clackamas.edu).

**Outcomes**

**Related Instruction Outcomes**

**Computation**

- 1 course - BA-104 Business Math
- Use appropriate mathematics to solve problems

**Communication**

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

**Human Relations**

- 1 course - BA-285 Human Relations in Business
- Engage in ethical communication processes that accomplish goals

**Physical Education/Health/Safety/First Aid**

- 1 credit - See [Related Instruction \(p. \)](#) for course list
- Use effective life skills to improve and maintain mental and physical wellbeing

**Program Outcomes**

Upon successful completion of this program, students should be able to:

- analyze and apply basic computer literacy skills, including typing by touch and numerical data entry keyboarding skills;
- effectively and independently utilize business standard software applications (word processing, spreadsheets, database creation/organization, presentations, email/calendars, creation of forms and pdf documents, and office organizational tools);
- identify and analyze the skills necessary for effective office, business, and organizational operations;
- articulate, analyze, and apply basic business math and accounting skills common to business and organizational operations;
- articulate, analyze, and apply basic English grammar within common business documents (letters, reports, memos) as well as in verbal communication and presentations common to business offices and organizations.

**Requirements**

**First Year**

<b>Fall Term</b>		<b>Credits</b>
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-131	Introduction to Business Computing	4
WR-121Z	Composition I <sup>1</sup>	4
<b>Credits</b>		<b>15</b>

**Winter Term**

BA-111 or BA-211	General Accounting I or Financial Accounting	3-4
BT-120	Personal Keyboarding	2
BT-121	Data Entry	1
BT-124	Business Editing I	3

BT-160	Word I	3
<b>Credits</b>		<b>12-13</b>
<b>Spring Term</b>		
BA-270	Social Media Marketing	4
BT-122	Keyboarding Skillbuilding	2
BT-125	Business Editing II	3
BT-174	Microsoft Digital Tools for the Professional	2
CS-135S	Microsoft Excel	3
PE/Health/Safety/First Aid requirement (p. )		1
<b>Credits</b>		<b>15</b>
<b>Second Year</b>		
<b>Fall Term</b>		
BA-205	Business Communications With Technology	4
BA-226	Business Law I	4
BA-285	Human Relations in Business	4
BT-262	Integrated Projects	4
<b>Credits</b>		<b>16</b>
<b>Winter Term</b>		
BA-224	Human Resource Management	4
BT-216	Office Procedures	4
COMM-111Z	Public Speaking	4
Electives (p. 131)		4
<b>Credits</b>		<b>16</b>
<b>Spring Term</b>		
BA-228	Computerized Accounting	3
BT-161	Word II	3
BT-271	Advanced Business Projects	4
Electives (p. 131)		6
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>90-91</b>

<sup>1</sup> This course will be removed from the first term IF the student is required to enroll in FYE-101 First Year Experience Level I. WR-121Z Composition I will be rescheduled in a term conducive to a student's preference.

## Electives

Any BA (p. 255) or BT (p. 258) course not included in the program.

Students are encouraged to use the elective credits that focus on the following:

- Human Resources
- Accounting
- Project Management
- Marketing

## Careers

Career opportunities include:

- administrative assistant
- office manager
- project coordinator

- legal assistant
- medical secretary

## Auto Body/Collision Repair and Refinishing Technology, AAS

**Program Code: AAS.ABCOLRRTECH**

The Auto Body/Collision Repair and Refinishing program simulates real working conditions in a well-equipped modern shop facility. Training combines intensive theory and practical lab experience tailored to specific needs. Course work includes one term of cooperative work experience with a local employer. The flexibility of the program allows students to enter any term and proceed at their own pace.

Technicians repair or replace parts, straighten structure, install and adjust glass and components, repair electrical systems, restraints, suspension components, brakes, prepare all types of surfaces for necessary refinishing operations, mix and apply modern urethane and waterborne paint products, and finish their work to industry standards. Skills learned include welding, metal straightening, filler use, plastic repair, surface preparation, masking, product selection, mixing, color matching and application techniques, as well as detailing and troubleshooting. This degree qualifies students for I-CAR Non-structural Technician Pro Level I and I-CAR Refinish Technician Pro Level I Certification.

For information contact Dustin Bates, 503-594-3973 or [dustinb@clackamas.edu](mailto:dustinb@clackamas.edu), or the Automotive and Welding Department, 503-594-3047.

## Outcomes

### Related Instruction Outcomes

### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II
- Use appropriate mathematics to solve problems

### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

### Human Relations

- 1 course - Recommended: COMM-100Z Introduction to Communication or PSY-101 Human Relations
- Engage in ethical communication processes that accomplish goals

### Physical Education/Health/Safety/First Aid

- 3 credits - Recommended: HE-252 First Aid/CPR/AED or MFG-107 Industrial Safety & First Aid
- Use effective life skills to improve and maintain mental and physical wellbeing

## Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate the proper selection of tools and materials needed to perform metal straightening and plastic filler repair processes;
- prepare a repaired surface, choose and apply appropriate materials, block sand, clean surface, and apply topcoat, detail;

- repair sheet metal damage, demonstrate panel replacement techniques, identify structural damage, and formulate viable repair processes;
- perform spot repairs and blends using the latest industry accepted practices and materials, to the standards of industry;
- demonstrate skill in major body repair, including frame and Unibody repair;
- demonstrate the use of electronic frame measuring systems, during the repair of full frame and Unibody vehicles;
- plan and execute an industry acceptable repair on both full frame and Unibody vehicles, including structural, non-structural, cosmetic and mechanical repairs;
- display the skills needed to apply high-end automotive finishes to a variety of automotive substrates;
- perform a variety of welding processes needed to properly repair vehicles of both steel and aluminum construction, in accordance with I-CAR guidelines;
- demonstrate competency in Collision Repair Estimating, using Mitchells guides, Audatex, and CCC One software.

## Requirements

### First Year

First Term		Credits
AB-112	Collision Repair Welding I	2
AB-113	Collision Repair I/Nonstructural	6
ABR-125	Collision Repair/Refinishing I	6
MTH-050 or MTH-065	Technical Mathematics I or Algebra II	4
<b>Credits</b>		<b>18</b>

### Second Term

AB-123	Collision Repair Welding II	2
AB-133	Collision Repair II/Structural	6
ABR-127	Collision Repair/Refinishing II	6
<b>Credits</b>		<b>14</b>

### Third Term

AB-222	Collision Repair III/Advanced Structural	6
ABR-129	Collision Repair/Refinishing III	6
<b>Human Relations requirement (p. )</b>		<b>3</b>
COMM-100Z	Introduction to Communication (Recommended)	
PSY-101	Human Relations (Recommended)	
<b>Credits</b>		<b>15</b>

### Second Year

#### Fourth Term

AB-149	Collision Repair Estimating I	2
AB-224	Collision Repair IV/Advanced Structural	6
ABR-225	Production Shop Techniques	6
<b>PE/Health/Safety/First Aid requirement (p. )</b>		<b>3</b>
HE-252	First Aid/CPR/AED (Recommended)	
MFG-107	Industrial Safety & First Aid (Recommended)	
<b>Credits</b>		<b>17</b>

### Fifth Term

AB-150	Collision Repair Computerized Estimating - Audatex	2
AB-226	Collision Repair V/Advanced Structural	6
AB-235	Collision Repair Welding III	2
ABR-227	Restoration Practices	6

**Credits** **16**

### Sixth Term

AB-151	Collision Repair Computerized Estimating - CCC ONE	2
AB-280	Collision Repair/CWE	6
WR-101 or WR-121Z	Workplace Writing or Composition I	4

**Credits** **12**

**Total Credits** **92**

## Careers

Career opportunities include:

- auto body technician
- frame technician
- auto body mid-tech
- painter's helper
- painter
- estimator
- manager in an independent repair shop
- automobile dealership
- truck or heavy equipment dealer
- service center
- sales of auto body related tools and materials

## Automotive Service Technology, AAS

### Program Code: AAS.AUTOSERTECH

The instruction, curriculum, facilities, and equipment of the Automotive Service Technology program have been evaluated by the Automotive Service Excellence Education Foundation (ASEEF) and are accredited to the Master Automotive Service Technician (MAST) level.

Training combines operational theory with hands-on activities in engine repair, automatic transmissions, manual transmission and drive train, suspension and steering, brakes, electrical and electronic systems, heating and air conditioning, engine performance, safety systems, and alternative fuel transportation vehicles.

The program consists of instructional blocks of 100 hours each that are a combination of lecture and hands-on laboratory work. Each instructional block focuses on a specialized area and at the completion, students are assessed according to their success in meeting course outcomes.

Partnerships between CCC and automotive repair businesses will allow you to learn in the classroom and on the job through the Internship and the Cooperative Work Experience (CWE) courses.

The program prepares students to pass ASE certification tests and begin a career as an automotive service technician. Students can achieve industry-recognized ASE certification shortly after earning a degree.

Entry into the program is yearly, typically beginning fall term. An alternate schedule may be available depending on program limits for student seat loads.

For information contact Dustin Bates, 503-594-3973 or [dustinb@clackamas.edu](mailto:dustinb@clackamas.edu), or the Automotive and Welding Department, 503-594-3047.

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 1 course - Recommended: COMM-100Z Introduction to Communication or PSY-101 Human Relations
- Engage in ethical communication processes that accomplish goals

#### Physical Education/Health/Safety/First Aid

- 3 credits - Recommended: HE-252 First Aid/CPR/AED or MFG-107 Industrial Safety & First Aid
- Use effective life skills to improve and maintain mental and physical wellbeing

## Program Outcomes

Upon successful completion of this program, students should be able to:

- work safely in the shop, including addressing environmental concerns related to the industry;
- apply technical knowledge, understanding, and skills to tasks, in accordance with Automotive Service Excellence Education Foundation (ASEEF) Program Accreditation;
- apply the principles of engineering, mathematics, and science to analyze and diagnose electrical, hydraulic, and mechanical concerns in automotive applications;
- research, report, and present industry related data, using computer knowledge and skills;
- apply critical thinking skills in technical problem solving;
- communicate effectively, both orally and in writing, in an automotive service setting;
- use Industry approved diagnostic equipment to analyze and diagnose vehicle systems.

## Requirements

#### First Year

Fall Term		Credits
AM-101	Intro to Automotive Service Technology	2
AM-129	Electrical Systems I	5
AM-130	Brake Systems	5

MTH-050 or MTH-065	Technical Mathematics I or Algebra II	4
<b>Credits</b>		<b>16</b>

#### Winter Term

AM-131	Suspension Systems	5
AM-133	Engine Systems	5
WR-101 or WR-121Z	Workplace Writing or Composition I	4
PE/Health/Safety/First Aid requirement (p. )		3
HE-252	First Aid/CPR/AED (Recommended)	
MFG-107	Industrial Safety & First Aid (Recommended)	
<b>Credits</b>		<b>17</b>

#### Spring Term

AM-135	Power Transmission Systems	5
AM-142	Engine Performance I	5
Human Relations requirement (p. )		3
COMM-100Z	Introduction to Communication	
PSY-101	Human Relations (Recommended)	
<b>Credits</b>		<b>13</b>

#### Second Year

##### Fall Term

AM-201	Automotive Internship	3
AM-224	Comfort Systems	5
AM-229	Electrical Systems II	5
<b>Credits</b>		<b>13</b>

##### Winter Term

AM-242	Engine Performance II	5
AM-245	Automatic Transmission Systems	5
AM-280	Auto Mechanics/CWE	6
<b>Credits</b>		<b>16</b>

##### Spring Term

AM-223	Alternative Fuels Transportation Technology	5
AM-225	Safety Systems	5
AM-228	Service Shop Management	4
WLD-102	Introduction to Welding	2
<b>Credits</b>		<b>16</b>

**Total Credits 91**

## Careers

Career opportunities include:

- automotive service mechanic/technician
- recreational vehicle service technician
- truck service mechanic/technician
- independent repair shops
- dealerships
- fleet maintenance facilities
- start your own business



# Business, AAS

## Program Code: AAS.BUSINESS

The Business AAS establishes a foundation for a successful business career while enabling students to explore a wide variety of business topics. Students can enhance their employability by completing certificates in [Accounting Clerk](#) (p. 179), [Business Management](#) (p. 181), [Human Resource Management](#) (p. 196), [Marketing](#) (p. 202), [Project Management](#) (p. 210), or [Retail Management](#) (p. 211) and to apply those the certificate credits can be applied towards completion of the Business AAS. Students may also select courses from a cross-section of certificate courses and approved electives.

## Oregon Tech Transfer Courses

The Business Department, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelor of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Sharon Parker, 503-594-3075 or [sharonp@clackamas.edu](mailto:sharonp@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - BA-104 Business Math
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 1 course - BA-285 Human Relations in Business
- Engage in ethical communication processes that accomplish goals

#### Physical Education/Health/Safety/First Aid

- 1 credit - See [Related Instruction](#) (p. ) for course list
- Use effective life skills to improve and maintain mental and physical wellbeing

## Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate an understanding of fundamental business concepts and explain how the functional areas of a business are integrated;
- interpret and present basic business-related financial information;
- demonstrate the ability to use a business computer system with Excel, Word, PowerPoint software to create business documents, data files and presentations;
- demonstrate the ability to communicate effectively to deliver a tailored message to a targeted audience that appropriately uses the vocabulary of business;

- demonstrate an understanding of key business legal and human resource practices;
- identify effective interpersonal strategies and concepts, including influence, power, and leadership styles, for individual and group situations;
- demonstrate the ability to research information, critically evaluate it, communicate it effectively, and use it to inform decision making.

## Requirements

### First Year

Fall Term		Credits
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-131	Introduction to Business Computing	4
WR-121Z	Composition I	4
<a href="#">Electives</a> (p. 135)		2-3
FYE-101	First Year Experience Level I (Recommended)	
<b>Credits</b>		<b>17-18</b>

### Winter Term

BA-119	Project Management Practices	2
BA-226	Business Law I	4
BA-251	Supervisory Management	3
BA-285	Human Relations in Business	4
<a href="#">Electives</a> (p. 135)		3-4
<b>Credits</b>		<b>16-17</b>

### Spring Term

BA-206	Management Fundamentals	4
BA-223	Principles of Marketing	4
BA-224	Human Resource Management	4
<a href="#">Electives</a> (p. 135)		3-4
BA-111	General Accounting I (Recommended)	
<b>Credits</b>		<b>15-16</b>

### Second Year

#### Fall Term

BA-205	Business Communications With Technology	4
BA-211	Financial Accounting	4
<a href="#">PE/Health/Safety/First Aid requirement</a> (p. )		1
<a href="#">Electives</a> (p. 135)		6-7
<b>Credits</b>		<b>15-16</b>

#### Winter Term

BA-213	Decision Making With Accounting Information	4
WR-227Z	Technical Writing	4
<a href="#">Electives</a> (p. 135)		6-8
<b>Credits</b>		<b>14-16</b>

#### Spring Term

BA-217	Budgeting for Managers	3
BA-250	Small Business Management	4

Electives (p. 135)	8
<b>Credits</b>	<b>15</b>
<b>Total Credits</b>	<b>92-98</b>

## Electives

By completing all AAS Degree requirements, you will satisfy the requirements for the [Business Management Certificate \(p. 181\)](#) and the [Management Fundamentals Career Pathway Certificate \(p. 222\)](#).

Any [BA \(p. 255\)](#) or [BT \(p. 258\)](#) course not included in the program, or any of the following:

Code	Title	Credits
CS-125H	HTML & Web Site Design	4
CS-135S	Microsoft Excel	3
CS-181	CMS Web Development	4
COMM-111Z	Public Speaking	4
EC-201	Principles of Economics: Micro	4
EC-202	Principles of Economics: Macro	4
FYE-101	First Year Experience Level I	2

## Careers

Career opportunities include:

- managers
- coordinators
- supervisors in areas such as project management, human resource management, customer service, or retail management

## Computer & Network Administration, AAS

**Program Code:** AAS.COMPNETADMIN

The Computer & Network Administration program prepares students for technical support careers specializing in network administration and maintenance. Students may earn either a one-year [Computer & Network Administration Certificate \(p. 182\)](#) or two-year AAS. The course work emphasizes development of analytical and problem-solving skills in addition to specific hardware and software configurations. Cooperative Work Experience (CWE) is supervised real-world employment that supplements the academic classroom environment.

For students interested in pursuing a bachelor's degree, the Computer & Network Administration AAS articulates to a Bachelor of Applied Science in Technology and Management at Oregon Tech.

## Oregon Tech Transfer Courses

The Computer & Network Administration program, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelor of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Rick Carino, 503-594-3167, or [rcarino@clackamas.edu](mailto:rcarino@clackamas.edu)

## Outcomes

### Related Instruction Outcomes

#### Computation

- 3 credits - See [Related Instruction \(p. \)](#) for course list
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-101 Workplace Writing or WR-227Z Technical Writing
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 3-4 credits - See [Related Instruction \(p. \)](#) for course list
- Engage in ethical communication processes that accomplish goals

#### Physical Education/Health/Safety/First Aid

- 1 credit - See [Related Instruction \(p. \)](#) for course list
- Use effective life skills to improve and maintain mental and physical well being

## Program Outcomes

Upon successful completion of this program, students should be able to:

- explain basic troubleshooting processes and procedures from initial diagnosis to final documentation and reporting;
- explain and demonstrate how to interact and communicate effectively with people of different technical backgrounds and professional positions;
- operate, install, manage, and troubleshoot major desktop operating systems;
- identify, install, and troubleshoot computer and network hardware components;
- understand fundamental network technologies and implement a basic local area network;
- exhibit good teamwork skills and serve as effective members of project teams;
- operate, install, manage, and troubleshoot major server operating systems;
- understand advanced network technologies and implement intricate internetwork infrastructures;
- understand and demonstrate basic computer and network security principles;
- develop, implement, and document an integrated information systems project;
- communicate the importance of professional and ethical responsibilities and be aware of codes of conduct and other sources of guidance for professionally ethical decision making;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

First Year		Credits
<b>Fall Term</b>		
CS-140	Introduction to Operating Systems	4
CS-227	Computer Hardware & Repair	4

WR-101 or WR-227Z	Workplace Writing or Technical Writing	4
<b>Credits</b>		<b>12</b>
<b>Winter Term</b>		
CS-151	Networking 1	4
CS-228	Computer OS Maintenance & Repair	4
CS-240W	Windows Desktop Administration	3
Electives (p. 136)		3-5
<b>Credits</b>		<b>14-16</b>
<b>Spring Term</b>		
CS-152	Networking 2	4
CS-225	Computer End User Support	3
CS-240L	Linux Administration I	4
CS-279W	Windows Server Administration	4
<b>Credits</b>		<b>15</b>
<b>Summer Term</b>		
CS-125H	HTML & Web Site Design	4
CS-280	Computer Science/CWE	3
Computation requirement (p. )		3
Human Relations requirement (p. )		3-4
<b>Credits</b>		<b>13-14</b>
<b>Second Year</b>		
<b>Fall Term</b>		
CS-135DB	Microsoft Access	3
CS-153	Networking 3	4
CS-280	Computer Science/CWE	3
PE/Health/Safety/First Aid requirement (p. )		1
Electives (p. 136)		3-4
<b>Credits</b>		<b>14-15</b>
<b>Winter Term</b>		
CS-240M	macOS Administration	3
CS-275	Database Design	3
CS-284	Network Security	3
CS-288W	Windows Network Administration	4
<b>Credits</b>		<b>13</b>
<b>Spring Term</b>		
CS-280	Computer Science/CWE	3
CS-297N	Networking Capstone	4
Electives (p. 136)		4
<b>Credits</b>		<b>11</b>
<b>Total Credits</b>		<b>92-96</b>

## Electives

Code	Title	Credits
BA-101 or BA-103	Introduction to Business Business Strategies for Computer Consultants	3-4
BA-120	Project Management Fundamentals	4
BA-264	Project Management Tools	3
FYE-101	First Year Experience Level I	2
WR-227Z	Technical Writing	4

Code	Title	Credits
Any CS course numbered CS-125 or higher not included in the program		3-4

## Careers

Career opportunities include:

- network specialist
- computer service technician
- field engineer
- customer service engineer
- computer technician
- PC/LAN support specialist

## Computer-Aided Manufacturing, AAS

Program Code: AAS.COMPAIDEMFG

This program combines training in computer-aided drafting (CAD) and computer-aided manufacturing (CAM). Course work emphasizes machine tool fundamentals, computer numerical control (CNC) and computer-aided manufacturing.

## Oregon Tech Transfer Courses

The Industrial Technology Department, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Manufacturing Engineering Technology degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact the Industrial Technology Department, 503-594-3318.

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 3 credits - See [Related Instruction \(p. \)](#) for course list
- Engage in ethical communication processes that accomplish goals

#### Physical Education/Health/Safety/First Aid

- 3 credits - MFG-107 Industrial Safety & First Aid
- Use effective life skills to improve and maintain mental and physical wellbeing

## Program Outcomes

Upon successful completion of this program, students should be able to:

- set-up and operate manual machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies;
- set-up and operate CNC machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies.
- apply computer software applications to produce manufacturing related documents, create CAD models, and generate CAM programs for machining processes;
- apply knowledge of programming electronic systems to improve industrial efficiency;
- apply knowledge of materials, physics and mathematics to effectively machine industrial materials;
- apply critical thinking skills to solve common machining and manufacturing problems;
- work safely in an industrial environment around machinery, power tools, electricity and chemicals.

## Requirements

### First Year

Fall Term		Credits
CDT-102	Sketching & Problem Solving	3
MTH-050	Technical Mathematics I <sup>1</sup>	4
MTT-111	Manual Machining I	4
MTT-121	CNC I: Set-Up and Operation	4
<b>Credits</b>		<b>15</b>

### Winter Term

CDT-108A	Introduction to SolidWorks	3
MTH-080	Technical Mathematics II <sup>1</sup>	3
MTT-112	Manual Machining II	4
MTT-122	CNC II: Programming and Operation	4
WR-101	Workplace Writing <sup>1</sup>	4
<b>Credits</b>		<b>18</b>

### Spring Term

CDT-225	Advanced SolidWorks	3
MFG-221	Materials Science	3
MTT-123	CNC III: Applied Programming and Operation	4
MTT-141	CAD/CAM I	4
Human Relations requirement (p. )		3
<b>Credits</b>		<b>17</b>

### Second Year

Fall Term		Credits
CDT-130 or CDT-223	Introduction to Fusion or Inventor Fundamentals	2-3
EET-215	Technical Mechanics	3
MFG-130	Basic Electricity I	3
MFG-218	Lean Manufacturing and Quality Systems	3
MTT-241	CAD/CAM II	4
<b>Credits</b>		<b>15-16</b>

### Winter Term

CDT-103	Computer-Aided Drafting I	3
EET-225	Mechatronics I	2
EET-233	Programmable Logic Controllers I	3

MFG-107	Industrial Safety & First Aid	3
MFG-209	Programming & Automation for Manufacturing	3
MTT-242	CAD/CAM III	4

**Credits 18**

### Spring Term

EET-234	Programmable Logic Controllers II	3
EET-235	Mechatronics II	2
HD-209 or MFG-280	Job Search Skills or Manufacturing Technology/CWE	3
MET-170	Introduction to Manufacturing Processes	3
MFG-219	Robotics	3

**Credits 14**

**Total Credits 97-98**

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

Students with specialized job training needs may be eligible to substitute some classes. Consult your instructor or the department chair for more information.

## Careers

Career opportunities include:

- CNC programmer and operator
- CAD technician
- manufacturing engineering technician
- CAD/CAM technician

## Construction Trades, General Apprenticeship, AAS

**Program Codes:** AAS.CONSTRUCTPB, AAS.CONSTRUCTPT

**Trades:** Plumbers, Painters

**6000-8000 BOLI-ATD Trades**

Registered Apprenticeship in the construction trades or occupations is a method of career and technical related training leading to certification and journey-level status.

This is a limited-entry program for registered apprentices who are sponsored by individual employers, accepted by a Joint Apprenticeship and Training Committee (JATC) and registered with the State of Oregon Bureau of Labor & Industries (BOLI).

Clackamas Community College offers three state-wide Apprenticeship degrees and their stackable Certificates of Completion and Career Pathway Certificates of Completion. These parent degrees are: **Electrician Apprenticeship Technologies AAS (p. 147)**, **Construction Trades General Apprenticeship AAS (p. 137)**, and **Industrial Mechanics and Maintenance Technology Apprenticeship AAS (p. 158)**. These degrees do not guarantee licensure.

This program is articulated with Oregon Institute of Technology (OIT), which requires a higher-level math course than is required for the program. Contact an Apprenticeship Advisor at CCC for help with transfer to OIT.

Electricians and plumbers require state licensure. Related training courses meet industry standards and are offered through a partnership between the Oregon State Apprenticeship & Training Council and the local Joint Apprenticeship & Training Committee.

For more information visit the [Apprenticeship webpage](#), or contact an Apprenticeship Advisor at 503-594-0959 or [apprenticeship.advising@clackamas.edu](mailto:apprenticeship.advising@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 3-5 credits - See [Related Instruction \(p. \)](#) for course list
- Use appropriate mathematics to solve problems

#### Communication

- 3-4 credits - See [Related Instruction \(p. \)](#) for course list
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 3-4 credits - See [Related Instruction \(p. \)](#) for course list
- Engage in ethical communication processes that accomplish goals

#### Physical Education/Health/Safety/First Aid

- 1-3 credits - See [Related Instruction \(p. \)](#) for course list
- Use effective life skills to improve and maintain mental and physical wellbeing

## Program Outcomes

Upon successful completion of this program, students should be able to:

### Building Fundamentals/Safety

- demonstrate safe working practices including rigging and lock out tag out in accordance with state and federal regulations;
- apply OSHA practices in relation to the specific trade;
- apply theory as it relates to trade competencies;
- utilize recognized standard building code guidelines as applicable;
- demonstrate ability to perform welding/brazing applications (plumbers);
- analyze the properties of materials and how they apply to welding and brazing applications (plumbers).

### Mathematics/Measurement/Calculations and Equipment

- calculate elementary algebraic equations and formulas;
- apply appropriate formulas to mathematical situations;
- demonstrate the proper care, use, and storage of hand and power tools.

## Blueprint and Schematics

- read and interpret building plans and drawings;
- prepare and utilize isometric sketching and detailed drawings per individual trade (plumbers).

## Code and Journey Level Preparation (Plumbers)

- utilize recognized standard building codes guidelines as applicable;
- complete a code prep exam with a 75% or higher score per individual trade.

## Requirements

### Plumber

Code	Title	Credits
	Journey Level Card from Oregon BOLI <sup>1</sup>	22
	Computation requirement (p. )	3-5
	Communication requirement (p. )	3-4
	Human Relations requirement (p. )	3-4
	PE/Health/Safety/First Aid requirement (p. )	1-3
APR-109PB	Plumbing Conservation Systems	2
APR-117PB	Plumbing Basic Trade & Code	3
APR-127PB	Plumbing Fittings & Materials	3
APR-137PB	Plumbing Basic Installation & ISO	3
APR-147PB	Plumbing Math	3
APR-157PB	Plumbing Pipe Sizing & Advanced Math	3
APR-167PB	Plumbing Welding and Print Reading	3
APR-177PB	Plumbing Related Science	3
APR-187PB	Plumbing Related Codes	3
APR-197PB	Plumbing Backflow Prevention	1
APR-205PB	Service Plumbing	3
APR-207PB	Municipal Systems	2
APR-217PB	Advanced Plumbing Installation	3
APR-227PB	Plumbing Gas Venting & Drains	3
APR-237PB	Plumbing Water Heater & Circuit Controls	3
APR-247PB	Advanced Plumbing Code I	3
APR-257PB	Advanced Plumbing Code II	3
APR-267PB	Advanced Plumbing Code III	3
APR-276PB	Plumbing Review I	3
APR-277PB	Plumbing Review II	3
APR-287PB	Plumbing Review III	3
<b>Total Credits</b>		<b>91-97</b>

<sup>1</sup> Students who obtain a State of Oregon Apprenticeship Training Journey Level Card or Oregon Bureau of Labor and Industries Apprenticeship and Training Division (BOLI-ATD) Certificate of Completion will earn 22 Credits.

## Painter

Code	Title	Credits
	Journey Level Card from Oregon BOLI <sup>1</sup>	22
	Computation requirement (p. )	3-5
	Communication requirement (p. )	3-4
	Human Relations requirement (p. )	3-4

Code	Title	Credits
PE/Health/Safety/First Aid requirement (p. )		1-3
Elective (100 level or above)		40-34
APR-119PT	Basic Trade & Safety	2
APR-129PT	Basic Surface & Preparation	2
APR-139PT	Hand & Mechanical Cleaning	2
APR-149PT	Basic Applications	2
APR-159PT	Basic Covering & Problem Solving	2
APR-169PT	Advanced Coating	2
APR-219PT	Advanced Graphics & Texturing	2
APR-229PT	Advanced Techniques	2
APR-239PT	Advanced Estimating & Codes	2
<b>Total Credits</b>		<b>90</b>

<sup>1</sup> Students who obtain a State of Oregon Apprenticeship Training Journey Level Card or Oregon Bureau of Labor and Industries Apprenticeship and Training Division (BOLI-ATD) Certificate of Completion will earn 22 Credits.

## Careers

Limited-Entry Program - Apprenticeship Card Required. This degree does not guarantee licensure.

- Asbestos Removal
- Carpenter
- HVAC/R
- Interior/Exterior Finisher
- Painter<sup>1</sup>
- Pile Driver
- Plumber<sup>1</sup>
- Scaffold Erector
- Sheet Metal

<sup>1</sup> Programs offered at Clackamas Community College through partnership with local JATC.

## Criminal Justice, AAS

**Program Code: AAS.CRIMJUSTICE**

The course work for this two-year program is designed to develop students' knowledge and skills in the areas of law enforcement, courts and corrections. Areas emphasized include community policing, criminal investigation, routine patrol and criminological theory. Students gain an appreciation of the various parts of the criminal justice system and how they function as a whole. Students may enter this program any term.

The course work for this program includes cooperative work experience which affords the student opportunity for hands-on experience with many local, federal and state law enforcement agencies.

For general information or information about transferring to a four-year institution contact Sharron Furno, 503-594-6224 or [sharron.furno@clackamas.edu](mailto:sharron.furno@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-098 College Math Foundations
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 1 course - CJA-250 Reporting, Recording & Testifying
- Engage in ethical communication processes that accomplish goals

### Physical Education/Health/Safety/First Aid

- 1 course - HPE-296 Health and Fitness for Criminal Justice
- Use effective life skills to improve and maintain mental and physical wellbeing

## Program Outcomes

Upon successful completion of this program, students should be able to:

- identify and define each step in the criminal justice process, and critically analyze how a case proceeds through the system, including landmark U.S. Supreme court decisions;
- explain the functions of law enforcement and corrections in the United States in terms of historical roots, structure and contemporary issues;
- demonstrate knowledge of ethical practices in educational and professional settings;
- recognize how criminal justice professionals work effectively within a diverse society;
- identify causes and indicators of crime and their effect on the criminal justice system's response;
- demonstrate effective verbal communication skills in a criminal justice setting;
- demonstrate effective written communication skills in a criminal justice setting.

## Requirements

### First Year

Fall Term		Credits
CJA-110	Introduction to Law Enforcement	3
CJA-122	Criminal Law	4
MTH-098	College Math Foundations	4
WR-121Z	Composition I	4
<b>Credits</b>		<b>15</b>

### Winter Term

CJA-101 or CJA-201	Criminology or Juvenile Delinquency	4
CJA-120	Introduction to Courts	3
CJA-203	Crisis Intervention	3
FYE-101	First Year Experience Level I	2



WR-122Z	Composition II	4
<b>Credits</b>		<b>16</b>
<b>Spring Term</b>		
CJA-130	Introduction to Corrections	3
CJA-206 or HS-206	Trauma Informed Practices or Trauma Informed Practices	3
CJA-213	Interview & Interrogation	3
CJA-216	Implicit Bias and Policing	3
PSY-219	Introduction to Abnormal Psychology	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall Term</b>		
CJA-210	Criminal Investigation I	3
CJA-214	Intimate Partner Violence	3
CJA-223	Criminal Justice Ethics	3
HDF-260	Understanding Child Abuse and Neglect	3
<b>Electives (p. 140)</b>		3-4
<b>Credits</b>		<b>15-16</b>
<b>Winter Term</b>		
CJA-170	Careers in Criminal Justice	3
CJA-211	Criminal Investigation II	3
CJA-222	Procedural Law	3
HPE-296	Health and Fitness for Criminal Justice	3
<b>Electives (p. 140)</b>		3
<b>Credits</b>		<b>15</b>
<b>Spring Term</b>		
CJA-200	Community Policing	3
CJA-212	Criminal Investigation III	3
CJA-250	Reporting, Recording & Testifying	4
CJA-270	Criminal Justice Capstone	3
CJA-280	Criminal Justice/Corrections/CWE	3
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>93-94</b>

## Electives

Any **CJA** (p. 265) course not included in the program, or any of the following:

Code	Title	Credits
GRN-183	Death and Dying	3
HST-131	History of Crime & Punishment in Western Civilization	4

## Careers

Career opportunities include:

- law enforcement officer at the local, state or national level
- loss prevention officers
- Homeland Security officers

Many departments require college course work or degrees in addition to civil service requirements

# Criminal Justice, Corrections Option, AAS

**Program Code:** AAS.CORRECTIONS

The Corrections program utilizes an interdisciplinary approach, including sociological, psychological and biological behavioral perspectives to provide students with a well-rounded basis for interacting with corrections clients in a variety of correctional settings.

Course work includes cooperative work experience, hands-on experience in a correctional agency to supplement and apply knowledge gained in academic courses.

For information, contact Sharron Furno, 503-594-6224 or [sharron.furno@clackamas.edu](mailto:sharron.furno@clackamas.edu)

## Outcomes

### Related Instruction Outcomes

### Computation

- 1 course - MTH-098 College Math Foundations
- Use appropriate mathematics to solve problems

### Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

### Human Relations

- 1 course - CJA-250 Reporting, Recording & Testifying
- Engage in ethical communication processes that accomplish goals

### Physical Education/Health/Safety/First Aid

- 1 course - HPE-296 Health and Fitness for Criminal Justice
- Use effective life skills to improve and maintain mental and physical wellbeing

## Program Outcomes

Upon successful completion of this program, students should be able to:

- identify and define each step in the criminal justice process, and critically analyze how a case proceeds through the system, including landmark U.S. Supreme Court decisions;
- explain the functions of law enforcement and corrections in the United States in terms of historical roots, structure and contemporary issues;
- identify conditions and personal characteristics that are specific to working with offenders in an institutional or community setting, and develop strategies for coping with those conditions;
- demonstrate knowledge of ethical practices in educational and professional settings;
- recognize how criminal justice professionals work effectively within a diverse society;
- identify causes and indicators of crime and their effect on the criminal justice system's response;
- analyze contemporary issues in the adult and juvenile corrections systems in the United States and outline possible responses to those issues;

- demonstrate effective verbal communication skills in a criminal justice setting;
- demonstrate effective written communication skills in a criminal justice setting.

CJA-280	Criminal Justice/Corrections/CWE	3
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>91</b>

## Requirements

### First Year

Fall Term		Credits
CJA-110	Introduction to Law Enforcement	3
CJA-122	Criminal Law	4
MTH-098	College Math Foundations	4
WR-121Z	Composition I	4
<b>Credits</b>		<b>15</b>

### Winter Term

CJA-101 or CJA-201	Criminology or Juvenile Delinquency	4
CJA-120	Introduction to Courts	3
CJA-203	Crisis Intervention	3
FYE-101	First Year Experience Level I	2
HS-156	Conducting Human Service Interviews	3
<b>Credits</b>		<b>15</b>

### Spring Term

CJA-130	Introduction to Corrections	3
CJA-206 or HS-206	Trauma Informed Practices or Trauma Informed Practices	3
CJA-216	Implicit Bias and Policing	3
PSY-219	Introduction to Abnormal Psychology	4
<b>Credits</b>		<b>13</b>

### Second Year

Fall Term		Credits
CJA-223	Criminal Justice Ethics	3
CJA-252	Introduction to Restorative Justice	3
HDF-260	Understanding Child Abuse and Neglect	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HS-210	Motivational Interviewing	3
<b>Credits</b>		<b>15</b>

### Winter Term

CJA-134	Correctional Institutions	3
CJA-170	Careers in Criminal Justice	3
HPE-296	Health and Fitness for Criminal Justice	3
HS-211	Infectious Diseases and Harm Reduction	1
HS-216	Group Counseling Skills	3
WR-122Z	Composition II	4
<b>Credits</b>		<b>17</b>

### Spring Term

CJA-215	Sexual Abuse and Human Trafficking	3
CJA-232	Case Management	3
CJA-250	Reporting, Recording & Testifying	4
CJA-270	Criminal Justice Capstone	3

## Careers

Career opportunities include:

- correctional officer
- correctional counselor
- probation and parole officer

Career opportunities are generally in jail and prison facilities as well as community corrections agencies

## Digital Media Communications, AAS

**Program Code: AAS.DMC1**

The Digital Media Communications (DMC) degree is designed to successfully prepare students for careers in the expanding fields of digital media productions and communications.

## Oregon Tech Transfer Courses

The Art Department, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelor of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Nora Brodnicki, 503-594-3036 or [norab@clackamas.edu](mailto:norab@clackamas.edu).

## Outcomes

### Related Instruction Outcomes Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher or CS-161 Computer Science I
- Use appropriate mathematics to solve problems.

### Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

### Human Relations

- 1 course - COMM-100Z Introduction to Communication or PSY-101 Human Relations
- Engage in ethical communication processes that accomplish goals.

### Physical Education/Health/Safety/First Aid

- 1 credit - See [Related Instruction](#) (p. ) for course list
- Use effective life skills to improve and maintain mental and physical wellbeing.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- produce media that demonstrates preparedness for entry into a field related to one of the DMC focus areas and present the work for potential professional opportunities;
- critically analyze and discuss digital media works in the context of mass media and society;
- demonstrate an awareness of ethical and legal considerations involved when creating digital media works; including basic professional skills related to documentation and rights licensing for copyright, fair use, etc.;
- complete digital media video projects illustrating professional entry-level competence in planning, production, sound/music, and editing tools and techniques;
- create a digital media portfolio in a way that showcases specialized skills in one or more of the following focus areas: Motion Graphics & Computer Animation, Journalism, Video Production, and Music & Sound for Media.

## Requirements

### First Year

Fall Term		Credits
ART-115	Basic Design: 2-Dimensional Design	4
ART-262	Digital Photography & Photo-Imaging	4
DMC-100	Introduction to Media Arts	3
WR-121Z	Composition I	4
PE/Health/Safety/First Aid requirement (p. )		1
<b>Credits</b>		<b>16</b>

### Winter Term

COMM-100Z or PSY-101	Introduction to Communication or Human Relations	3-4
DMC-104	Digital Video Editing	4
Select one of the following:		4
MTH-065	Algebra II	
MTH-050	Technical Mathematics I	
Higher Level Math or Statistics		
CS-161	Computer Science I	
Electives (p. 143)		4
<b>Credits</b>		<b>15-16</b>

### Spring Term

J-211 or COMM-212	Mass Media & Society or Mass Media & Society	4
Focus Area Courses (p. 142)		4
Electives (p. 143)		5
<b>Credits</b>		<b>13</b>

### Second Year

Fall Term		Credits
MUS-247 or DMC-247	Sound for Media or Sound for Media	3
Focus Area Courses (p. 142)		8
Electives (p. 143)		4
<b>Credits</b>		<b>15</b>

### Winter Term

DMC-291	Digital Media Communications Portfolio Project I	4
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Focus Area Courses (p. 142)		12
<b>Credits</b>		<b>16</b>
<b>Spring Term</b>		
BA-101	Introduction to Business	4
DMC-280	Digital Media Communications/CWE	3
DMC-292	Digital Media Communications Portfolio Project II	4
Focus Area Courses (p. 142)		4
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>90-91</b>

## Focus Areas

### Motion Graphics & Computer Animation

Code	Title	Credits
ART-131	Introduction to Drawing	4
ART-225	Computer Graphics I	4
ART-226	Computer Graphics II	4
DMC-106	Animation & Motion Graphics I	4
DMC-107	Animation & Motion Graphics II	4
DMC-221	Introduction to 2D Animation: Design & Techniques	4
DMC-222	Advanced 2D Animation: Design & Techniques	4

### Journalism

Code	Title	Credits
ART-225	Computer Graphics I	4
J-134	Photojournalism	4
J-215	College News: Writing & Photography	4
J-216	Writing for Media	4
J-220	Podcasting and Video Journalism	4
or DMC-230	Documentary Film Production	
J-226	Introduction to College News: Design & Production	4
WR-240	Creative Nonfiction Writing I	4
or WR-265	Digital Storytelling	

### Video Production

Code	Title	Credits
DMC-106	Animation & Motion Graphics I	4
DMC-205	Directing for Film & Video	4
DMC-230	Documentary Film Production	4
DMC-264	Digital Filmmaking	4
DMC-265	Advanced Digital Filmmaking	4
ENG-194	Introduction to Film	4
WR-262	Introduction to Screenwriting	4

### Music & Sound for Media

Code	Title	Credits
DMC-242	Field Recording for Media	1
MUS-101	Music Fundamentals	3
MUS-106	Audio Recording At Home	1
or MUS-149	Advanced Pro Tools Editing Techniques	
MUS-107	Introduction to Audio Recording I	3
MUS-108	Introduction to Audio Recording II	3
MUS-141	Introduction to the Music Business	3

Code	Title	Credits
MUS-142	Introduction to Electronic Music I: MIDI	3
MUS-143	Introduction to Electronic Music II: Sequencing, Audio Looping, Sound EFX	3
MUS-145	Introduction to Digital Sound, Video & Animation	3
MUS-147	Music, Sound & Moviemaking	1
MUS-170	Introduction to Scoring Music for Media	2
MUS-171	Sound Design	2

## Electives

Additional electives must be from different subject areas, from the following list of prefixes: **ART** (p. 247), **BA** (p. 255), **COMM** (p. 260), **CS** (p. 261), **DMC** (p. 269), **EFA** (p. 274), **ENG** (p. 278), **FYE** (p. 285), **J** (p. 299), **MUS** (p. 308), **SPN** (p. 328), **TA** (p. 329), or **WR** (p. 335)

## Careers

Career opportunities include:

- production designer
- art department coordinator
- camera operator
- writer (general, film, and documentary)
- editor, visual effects production
- digital media producer
- sound mixer and recordist
- boom operator
- post-production sound design
- duplication
- music composer
- looping and foley
- mobile location recording
- voice-over work
- audio for interactive digital media
- Steadicam operator
- assistant editor
- weblog contributor
- broadcast journalist
- podcast writer and production
- script supervisor and continuity
- videographer
- production assistant
- graphic artist
- photographer (still)
- location assistant
- storyboard artist
- art assistant
- web designer
- electronic news gatherer
- web radio program editor
- live sound engineer
- broadcast reporter
- other emerging opportunities

## Early Childhood Education & Family Studies, AAS

**Program Code:** AAS.EARLYCHILDFAM

This program provides a foundation in the ten core knowledge categories: Family and Community Systems; Diversity; Health, Safety and Nutrition; Human Growth and Development; Learning Environments and Curriculum; Observation and Assessment; Personal, Professional and Leadership Development; Program Management; Special Needs; and Understanding and Guiding Behavior (The Oregon Registry, 2008).

Students must obtain a First-Aid certificate with infant-toddler CPR by the end of the first year.

For information contact Dawn Hendricks, 503-594-6158 or [dawn.hendricks@clackamas.edu](mailto:dawn.hendricks@clackamas.edu)

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or MTH-098 College Math Foundations
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - ED-258 Culturally Responsive Teaching & Education
- Engage in ethical communication processes that accomplish goals.

#### Physical Education/Health/Safety/First Aid

- 1 course - HPE-295 Health & Fitness for Life
- Use effective life skills to improve and maintain mental and physical well-being.

## Program Outcomes

These program learning outcomes (PLOs) were adopted from National Association for the Education of Young Children (NAEYC) early childhood teacher preparation standards and competencies. These standards represent what students should know and be able to do as a result of graduating from our program.

### Child Development and Learning in Context

- are grounded in an understanding of the developmental period of early childhood from birth through age 8 across developmental domains;
- understand each child as an individual with unique developmental variations;
- understand that children learn and develop within relationships and within multiple contexts, including families, cultures, languages, communities, and society;
- use this multidimensional knowledge to make evidence-based decisions about how to carry out their responsibilities.

## Family-Teacher Partnerships and Community Connections

Early childhood educators understand that successful early childhood education depends upon educators' partnerships with the families of the young children they serve.

- know about, understand, and value the diversity in family characteristics;
- use this understanding to create respectful, responsive, reciprocal relationships with families and to engage with them as partners in their young children's development and learning;
- use community resources to support young children's learning and development and to support children's families, and they build connections between early learning settings, schools, and community organizations and agencies.

## Child Observation, Documentation, and Assessment

- understand that the primary purpose of assessments is to inform instruction and planning in early learning settings;
- know how to use observation, documentation, and other appropriate assessment approaches and tools;
- use screening and assessment tools in ways that are ethically grounded and developmentally, culturally, ability, and linguistically appropriate to document developmental progress and promote positive outcomes for each child
- in partnership with families and professional colleagues, early childhood educators use assessments to document individual children's progress and, based on the findings, to plan learning experiences.

## Developmentally, Culturally, and Linguistically Appropriate Teaching Practices

Early childhood educators understand that teaching and learning with young children is a complex enterprise, and its details vary depending on children's ages and characteristics and on the settings in which teaching and learning occur.

- understand and demonstrate positive, caring, supportive relationships and interactions as the foundation for their work with young children;
- understand and use teaching skills that are responsive to the learning trajectories of young children and to the needs of each child;
- use a broad repertoire of developmentally appropriate and culturally and linguistically relevant, anti-bias, and evidence-based teaching approaches that reflect the principles of universal design for learning.

## Knowledge, Application, and Integration of Academic Content in the Early Childhood Curriculum

Early childhood educators have knowledge of the content of the academic disciplines (e.g., language and literacy, the arts, mathematics, social studies, science, technology and engineering, physical education) and of the pedagogical methods for teaching each discipline.

- understand the central concepts, the methods and tools of inquiry, and the structures in each academic discipline;
- understand pedagogy, including how young children learn and process information in each discipline, the learning trajectories for each discipline, and how teachers use this knowledge to inform their practice;

- apply this knowledge using early learning standards and other resources to make decisions about spontaneous and planned learning experiences and about curriculum development, implementation, and evaluation to ensure that learning will be stimulating, challenging, and meaningful to each child.

## Professionalism as an Early Childhood Educator

- identify and participate as members of the early childhood profession. They serve as informed advocates for young children, for the families of the children in their care, and for the early childhood profession;
- know and use ethical guidelines and other early childhood professional guidelines;
- have professional communication skills that effectively support their relationships and work with young children, families, and colleagues;
- are continuous, collaborative learners who
- develop and sustain the habit of reflective and intentional practice in their daily work with young children and as members of the early childhood profession.

## Requirements

First Year		Credits
<b>Fall Term</b>		
ECE-150	Introduction to Early Childhood Education & Family Studies	4
ECE-235	Safety, Health and Nutrition	3
ED-216	Foundations of Teaching & Education	4
FYE-101	First Year Experience Level I	2
WR-121Z	Composition I	4
<b>Credits</b>		<b>17</b>
<b>Winter Term</b>		
ECE-121	Observation and Guidance I in ECE Settings	4
ECE-154	Language & Literacy Development in Young Children	4
HDF-225	Prenatal, Infant & Toddler Development	3
Select one of the following:		4
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
MTH-098	College Math Foundations	
<b>Credits</b>		<b>15</b>
<b>Spring Term</b>		
ECE-240	Environments and Curriculum Planning	4
ECE-280	Early Childhood Education/CWE	3
ED-258	Culturally Responsive Teaching & Education	3
HDF-247	Preschool Through Adolescent Child Development	3
<b>Credits</b>		<b>13</b>
<b>Second Year</b>		
<b>Fall Term</b>		
ECE-179	The Professional in Early Childhood Education and Family Studies	4
ECE-221	Observation & Guidance II in ECE Settings	4
ECE-241	Environments and Curriculum Planning: Infants and Toddlers	3

ED-114	Instructional Strategies for Math	3
<b>Credits</b>		<b>14</b>
<b>Winter Term</b>		
ECE-291	Practicum II	4
ED-169	Overview of Students With Special Needs	3
ED-254	Instructional Strategies for Dual Language Learners	3
<b>Electives (p. 145)</b>		<b>4</b>
<b>Credits</b>		<b>14</b>
<b>Spring Term</b>		
ECE-239	Trauma-Informed Practices in Early Care and Education	3
ECE-292	Practicum III	4
ED-246	School, Family & Community Relations	4
HDF-140	Contemporary American Families	3
HPE-295	Health & Fitness for Life	3
<b>Credits</b>		<b>17</b>
<b>Total Credits</b>		<b>90</b>

## Electives

Code	Title	Credits
BA-101	Introduction to Business	4
BI-101	General Biology; Cellular Biology	4
COMM-111Z	Public Speaking	4
COMM-140	Introduction to Intercultural Communication	4
MTH-105Z	Math in Society	4
PSY-215	Introduction to Developmental Psychology	4
SOC-204	Introduction to Sociology	4
SPN-101	First-Year Spanish I	4
SPN-102	First-Year Spanish II	4
WR-122Z	Composition II	4

All courses must be passed with a C or better

## Careers

Career opportunities include:

- lead teacher in private and public early learning programs serving infants, toddlers, and preschoolers and as teacher assistants in kindergarten – 3rd grade classrooms
- family support personnel (e.g. family advocates, parent practitioners, family life paraprofessionals, etc.) in various education settings or child and family support agencies

## Educación infantil y estudios familiares, AAS

**Program Code: AAS.ECFSES**

Este programa proporciona una base en los estándares y competencias de preparación de maestros de la primera infancia de NAEYC:

1. promoción del desarrollo y el aprendizaje infantil,
2. establecimiento de asociaciones familiares y comunitarias,

3. observar, documentar y evaluar para apoyar a los niños pequeños y las familias,
4. usar enfoques eficaces en el desarrollo para conectarse con los niños y las familias,
5. usar del conocimiento del contenido para desarrollar un plan de estudios significativo,
6. convertirse en un profesional.

Los graduados del programa podrán trabajar como maestros de aprendizaje temprano, visitantes domiciliarios y asistentes de aula en entornos K-12.

## Resultados Objetivos de Aprendizaje Relacionados Computación

- 1 curso- MTH-050ES Matemáticas Técnicas I
- Utilizar las cuentas matemáticas adecuadas para resolver los problemas.

## Comunicación

- 1 curso- WR-124ES Escritura de ensayos de nivel universitario en español
- Leer de forma activa, pensar de forma crítica y escribir con capacidad y propósito para un público profesional.

## Relaciones Humanas

- 1 curso- ECE-258ES Equidad y Diversidad en La Educación Infantil
- Participar de procesos éticos de comunicación que logren objetivos.

## Educación Física/Salud/Seguridad/Primeros Auxilios

- 2 créditos - Consulte las **instrucciones relacionadas** (p. ) para la lista del curso
- Usar destrezas de vida eficaces para mejorar y mantener el bienestar mental y físico.

## Resultados del Programa

Al completar con éxito este programa, los estudiantes deberían poder:

- demostrar en un entendimiento del período de desarrollo en la niñez temprana, desde el nacimiento hasta los 8 años, en diferentes ámbitos del Desarrollo;
- trabajar con cada niño como una persona con variaciones del desarrollo únicas;
- resumir como los niños aprenden y se desarrollan dentro de relaciones y dentro de múltiples contextos, lo que incluye a las familias, las culturas, el idioma, las comunidades y la sociedad;
- usan este conocimiento multidimensional para tomar decisiones basadas en evidencia a fin de cumplir con sus responsabilidades;
- explicar la diversidad en las características de las familias;
- usan este entendimiento para crear relaciones respetuosas, sensibles y recíprocas con las familias y para participar con ellas y trabajar de manera conjunta en el desarrollo y en el aprendizaje de los niños pequeños;
- usan los recursos comunitarios para respaldar a las familias de los niños y construyen conexiones entre los entornos del aprendizaje en la niñez temprana, las escuelas y las organizaciones, y los organismos de la comunidad;



- explicar que el objetivo principal de las evaluaciones es orientar la enseñanza y la planificación en entornos de aprendizaje de la niñez temprana;
- usar la observación, la documentación y otros enfoques y herramientas de evaluación adecuados;
- utilizar las herramientas de exámenes y evaluaciones con bases éticas y apropiadas desde el punto de vista del desarrollo, la cultura, la capacidad y la lingüística para documentar el progreso del desarrollo y para promover resultados positivos para cada niño;
- formar asociaciones para las evaluaciones en colaboración con las familias y con colegas profesionales;
- demostrar relaciones e interacciones positivas, afectuosas y de apoyo como la base de su trabajo con niños pequeños;
- comprender y utilizar técnicas de enseñanza que responden a las trayectorias de aprendizaje de los niños pequeños y a las necesidades de cada niño; Los educadores de la niñez temprana;
- usar diversos métodos de enseñanza basados en evidencias, apropiados al desarrollo, y relevantes en cuanto a la cultura y a la lingüística, sin prejuicios, que reflejan los principios del diseño universal de Aprendizaje;
- implementar los conceptos centrales, los métodos y las herramientas y las estructuras en cada disciplina académica;
- describir la pedagogía, incluso cómo los niños pequeños aprenden y procesan la información en cada disciplina, las trayectorias de aprendizaje para cada disciplina, y cómo los maestros usan este conocimiento para informar su práctica;
- aplicar este conocimiento usando los estándares de aprendizaje de la niñez temprana y otros recursos para tomar decisiones sobre prácticas de enseñanza espontáneas y planificadas, y sobre el desarrollo, la implementación y la evaluación del currículo para garantizar que el aprendizaje sea estimulante, desafiante y significativo para cada niño;
- identificarse y participar como miembros de la profesión de la educación en la niñez temprana. Actuar como defensores informados de los niños pequeños, de las familias de los niños a su cargo y de la profesión de la educación en la niñez temprana;
- emplear principios éticos y otras pautas profesionales de la niñez temprana;
- practicar habilidades de comunicación profesionales que apoyan eficazmente sus relaciones y su trabajo con niños, familias y colegas;
- desarrollar y mantener la práctica reflexiva e intencionada en su trabajo diario con niños pequeños y como miembros de la profesión de la educación en la niñez temprana.

## Requisitos

### First Year

Fall Term		Credits
ECE-150ES	Introducción a la educación infantil y los estudios familiares	4
FYE-101ES	Experiencia de Primer Año (first Year Experience en español)	2
HDF-225ES	Desarrollo de las Etapas Prenatal, Infantes y de Niños Pequeños	4
WR-124ES	Escritura de ensayos de nivel universitario en español	4
<b>Credits</b>		<b>14</b>

### Winter Term

ECE-121ES	Observación y Orientación I en Educación Temprana	4
ECE-235ES	Seguridad, Salud, y Nutrición	3
HDF-247ES	Desarrollo y crecimiento en la niñez: preescolar hasta la adolescencia	4
MTH-050ES	Matemáticas Técnicas I	4
<b>Credits</b>		<b>15</b>

### Spring Term

ECE-240ES	Ambientes y Planificación Curricular	4
ECE-246ES	Relaciones entre la escuela, la familia y la comunidad	4
ECE-258ES	Equidad y Diversidad en La Educación Infantil	4
ECE-280ES	Experiencia Laboral Cooperativa	4
<b>Credits</b>		<b>16</b>

### Second Year

#### Fall Term

ECE-154ES	Desarrollo del Lenguaje y la Alfabetización	4
ECE-179ES	El Profesional en Educación Infantil	4
ECE-221ES	Observación y Orientación II en Educación Temprana	4
ECE-241ES	Ambientes y Planificación Curricular para Bebés y Niños Pequeños	4
<b>Credits</b>		<b>16</b>

#### Winter Term

ECE-169ES	Trabajar con Niños con Necesidades Especiales	4
ECE-239ES	Prácticas informadas por el trauma en el cuidado y la educación de la primera infancia	4
ECE-254ES	Estrategias de Instrucción para Estudiantes de Dos Idiomas	4
ECE-291ES	Practicum II	4
<b>Credits</b>		<b>16</b>

#### Spring Term

ECE-114ES	Matemáticas y ciencias para niños pequeños	4
ECE-292ES	Practicum III	4
HDF-260ES	Entender el Abuso y la Negligencia Infantil	3
Educación física/Salud/Seguridad/Requisito de primeros auxilios (p. )		2
<b>Credits</b>		<b>13</b>

<b>Total Credits</b>		<b>90</b>
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Los cursos deben aprobarse con una C o mayor

## Carreras

Las oportunidades profesionales incluyen:

- maestro principal en programas de aprendizaje temprano públicos y privados para bebés, niños pequeños y preescolares y maestros auxiliares en clases de kindergarten a 3.er grado
- personal de apoyo familiar (p. ej., defensores de familia, profesionales especializados en crianza, paraprofesionales especializados en vida

familiar, etc.) en diversos contextos educativos o agencias de apoyo infantil y familiar

## Electrician Apprenticeship Technologies, AAS

**Program Codes:** AAS.ELECTRICIANLE, AAS.ELECTRICIANUL, AAS.ELECTRICIANUM, AAS.ELECTRICIANUW, AAS.ELECTRICIANLME, AAS.ELECTRICIANUE

**Trades:** Limited Energy (LE), Protective Signaling (LE), Lineman (UL), Meterman (UM), Wireman (UW), Limited Maintenance Electrician (LME), and Line Estimator (UE)

### 4000-8000 BOLI-ATD Trades

Registered Apprenticeship in the electrician trades or occupations is a method of career and technical related training leading to certification and journey-level status.

This is a limited-entry program for registered apprentices who are sponsored by individual employers, accepted by a Joint Apprenticeship and Training Committee (JATC) and registered with the State of Oregon Bureau of Labor & Industries (BOLI).

Clackamas Community College offers three state-wide Apprenticeship degrees and their stackable Certificates of Completion and Career Pathway Certificates of Completion. These parent degrees are: [Electrician Apprenticeship Technologies AAS \(p. 147\)](#), [Construction Trades General Apprenticeship AAS \(p. 137\)](#), and [Industrial Mechanics and Maintenance Technology Apprenticeship AAS \(p. 158\)](#). These degrees do not guarantee licensure.

This program is articulated with Oregon Institute of Technology (OIT), which requires a higher-level math course than is required for the program. Contact an Apprenticeship Advisor at CCC for help with transfer to OIT.

Electricians and plumbers require state licensure. Related training courses meet industry standards and are offered through a partnership between the Oregon State Apprenticeship & Training Council and the local Joint Apprenticeship & Training Committee.

For more information visit the [Apprenticeship webpage](#), or contact an Apprenticeship Advisor at 503-594-0959 or [apprenticeship.advising@clackamas.edu](mailto:apprenticeship.advising@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 3-5 credits - See [Related Instruction \(p. \)](#) for course list
- Use appropriate mathematics to solve problems.

#### Communication

- 3-4 credits - See [Related Instruction \(p. \)](#) for course list
- Read actively, think critically, and write purposefully and capably for professional audiences.

### Human Relations

- 3-4 credits - See [Related Instruction \(p. \)](#) for course list
- Engage in ethical communication processes that accomplish goals.

### Physical Education/Health/Safety/First Aid

- 1-3 credits - See [Related Instruction \(p. \)](#) for course list
- Use effective life skills to improve and maintain mental and physical wellbeing.

## Program Outcomes

Upon successful completion of this program, students should be able to:

### Electrical Fundamentals/Safety

- solve mathematical formulas and equations of theory;
- describe and apply basic theory of electrical sources;
- demonstrate safe working practices in accordance with state and federal regulations.

### Mathematics/Measurement/Calculations and Equipment

- calculate voltage drop;
- solve electrical equations using trade specific mathematical formulas;
- use test equipment to make electrical measurements;
- use and care of trade specific equipment appropriately.

### Assessment and Troubleshooting

- operate PLC's according to trade specific applications and methodology;
- describe various troubleshooting techniques of trade specific equipment;
- draw and interpret blueprints and schematics.

### Electrical Code and Exam Preparation

- interpret NEC and Oregon Specialty Codes;
- prepare for state exam;
- complete and pass timed practice exams;
- demonstrate knowledge of industry terminology;
- use the NEC articles and tables to perform various calculations;
- utilize the Oregon Administrative Rules (OAEs) in relation to the NEC and Oregon Specialty Codes (OSC);
- complete the NEC code preparation exams with a 75% and higher.

## Requirements

### Limited Energy

Code	Title	Credits
	Journey Level Card from Oregon BOLI <sup>1</sup>	22
	<a href="#">Computation requirement (p. )</a>	3-5
	<a href="#">Communication requirement (p. )</a>	3-4
	<a href="#">Human Relations requirement (p. )</a>	3-4
	<a href="#">PE/Health/Safety/First Aid requirement (p. )</a>	1-3
	Elective (100 level or above)	22-16
APR-111LE	Residential Technologies	4
APR-112LE	Basic Trade, Code & Safety	4
APR-113LE	Specialized Control Systems	4

Code	Title	Credits
APR-114LE	Data Communications	4
APR-115LE	Amplified Systems	4
APR-116LE	Security Systems	4
APR-217LE	Integrated Systems	4
APR-218LE	Fire Alarm Systems	4
APR-219LE	ADA & Code	4
<b>Total Credits</b>		<b>90</b>

<sup>1</sup> Students who obtain a State of Oregon Apprenticeship Training Journey Level Card or Oregon Bureau of Labor and Industries Apprenticeship and Training Division (BOLI-ATD) Certificate of Completion will earn 22 Credits.

## Lineman

Code	Title	Credits
Journey Level Card from Oregon BOLI <sup>1</sup>		22
Computation requirement (p. )		3-5
Communication requirement (p. )		3-4
Human Relations requirement (p. )		3-4
PE/Health/Safety/First Aid requirement (p. )		1-3
Elective (100 level or above)		13-7
APR-111UL	Outside Electrical Basic Theory I	5
APR-112UL	Outside Electrical Basic Theory II	5
APR-113UL	Outside Electrical Basic Theory III	5
APR-121UL	Outside Electrical Fundamental Theory I	5
APR-122UL	Outside Electrical Fundamental Theory II	5
APR-123UL	Outside Electrical Fundamental Theory III	5
APR-231UL	Outside Electrical Advanced Theory I	5
APR-232UL	Outside Electrical Advanced Theory II	5
APR-233UL	Outside Electrical Advanced Theory III	5
<b>PGE Apprentice Recommended Electives</b>		
APR-118UL	Transformer Connections I	
APR-128UL	Transformer Connections II	
APR-138UL	Transformer Connections III	
<b>Total Credits</b>		<b>90</b>

<sup>1</sup> Students who obtain a State of Oregon Apprenticeship Training Journey Level Card or Oregon Bureau of Labor and Industries Apprenticeship and Training Division (BOLI-ATD) Certificate of Completion will earn 22 Credits.

## Meterman

Code	Title	Credits
Journey Level Card from Oregon BOLI <sup>1</sup>		22
Computation requirement (p. )		3-5
Communication requirement (p. )		3-4
Human Relations requirement (p. )		3-4
PE/Health/Safety/First Aid requirement (p. )		1-3
Elective (100 level or above)		13-7
APR-111UM	Metering: Basics I	5
APR-112UM	Metering: Basics II	5

Code	Title	Credits
APR-113UM	Metering: Basics III	5
APR-121UM	Metering: Fundamentals I	5
APR-122UM	Metering: Fundamentals II	5
APR-123UM	Metering: Fundamentals III	5
APR-231UM	Metering: Advanced I	5
APR-232UM	Metering: Advanced II	5
APR-233UM	Metering: Advanced III	5

### PGE Apprentice Recommended Electives

APR-118UL	Transformer Connections I	
APR-128UL	Transformer Connections II	
APR-138UL	Transformer Connections III	

**Total Credits** **90**

<sup>1</sup> Students who obtain a State of Oregon Apprenticeship Training Journey Level Card or Oregon Bureau of Labor and Industries Apprenticeship and Training Division (BOLI-ATD) Certificate of Completion will earn 22 Credits.

## Wireman

Code	Title	Credits
Journey Level Card from Oregon BOLI <sup>1</sup>		22
Computation requirement (p. )		3-5
Communication requirement (p. )		3-4
Human Relations requirement (p. )		3-4
PE/Health/Safety/First Aid requirement (p. )		1-3
Elective (100 level or above)		13-7
APR-111UW	Basic Substation Wireman I	5
APR-112UW	Basic Substation Wireman II	5
APR-113UW	Basic Substation Wireman III	5
APR-121UW	Fundamental Substation Wireman I	5
APR-122UW	Fundamental Substation Wireman II	5
APR-123UW	Fundamental Substation Wireman III	5
APR-231UW	Advanced Substation Wireman I	5
APR-232UW	Advanced Circuit Theory & Troubleshooting I	5
APR-233UW	Advanced Circuit Theory & Troubleshooting II	5
<b>Total Credits</b>		<b>90</b>

<sup>1</sup> Students who obtain a State of Oregon Apprenticeship Training Journey Level Card or Oregon Bureau of Labor and Industries Apprenticeship and Training Division (BOLI-ATD) Certificate of Completion will earn 22 Credits.

## Limited Maintenance Electrician

Code	Title	Credits
Journey Level Card from Oregon BOLI <sup>1</sup>		22
Computation requirement (p. )		3-5
Communication requirement (p. )		3-4
Human Relations requirement (p. )		3-4
Elective (100 level or above)		31-27
APR-104LM	Reading Schematics and Symbols	2
APR-108LM	ARC Flash Electrical Safety	1

Code	Title	Credits
APR-130LM	Basic Electricity I	3
APR-131LM	Basic Electricity II	3
APR-132LM	Basic Electricity III	3
APR-202LM	Electrical Code Level I	4
APR-203LM	Electrical Code-Level II	4
APR-204LM	Electrical Code-Level III	4
APR-223LM	Instrumentation & Controls	3
HE-261	Community CPR	1
<b>Total Credits</b>		<b>90</b>

<sup>1</sup> Students who obtain a State of Oregon Apprenticeship Training Journey Level Card or Oregon Bureau of Labor and Industries Apprenticeship and Training Division (BOLI-ATD) Certificate of Completion will earn 22 Credits.

## Line Estimator

Code	Title	Credits
	Journey Level Card from Oregon BOLI <sup>1</sup>	22
	Computation requirement (p. )	4
	Communication requirement (p. )	3-4
	Human Relations requirement (p. )	3-4
	PE/Health/Safety/First Aid requirement (p. )	1-3
APR-111UE	Line Estimator Basic I: Tools and Equipment	4
APR-112UE	Line Estimator Basic II: Electrical Theory	4
APR-113UE	Line Estimator Basic III: Wire Circuits	4
APR-121UE	Line Estimator Theory I: Operations	4
APR-122UE	Line Estimator Theory II: Standards	4
APR-123UE	Line Estimator Theory III: Power Line	4
APR-131UE	Electric Utility System Operation (EUSO)	3
APR-132UE	Estimator Navigational Mapping	3
APR-133UE	Estimator Facility Point Inspection	3
APR-134UE	Estimator Phase Design	3
APR-135UE	Estimator Metering	3
APR-136UE	Estimator Transformer Training	3
APR-137UE	Estimator Field Functions	3
APR-231UE	Line Estimator Responsibility I: Live Line	4
APR-232UE	Line Estimator Responsibility II: Substation	4
APR-233UE	Line Estimator Responsibility III: Field Responsibility	4
<b>Total Credits</b>		<b>90-94</b>

<sup>1</sup> Students who obtain a State of Oregon Apprenticeship Training Journey Level Card or Oregon Bureau of Labor and Industries Apprenticeship and Training Division (BOLI-ATD) Certificate of Completion will earn 22 Credits.

## Careers

Limited-Entry Program - Apprenticeship Card Required. This degree does not guarantee licensure.

4000 Hour BOLI-ATD Trades:

- Limited Energy Technician License B
- Limited Maintenance Electrician<sup>1</sup>
- Limited Renewable Energy Technician
- Limited Residential Electrician

6000 Hours BOLI-ATD Trades:

- Limited Energy Technician
- Sign Maker/Fabricator<sup>1</sup>

8000 Hours BOLI-ATD Trades:

- Inside Electrician<sup>1</sup>
- Manufacturing Plant Electrician
- Sign Assembler/Fabricator
- Sign Maker/Erector
- Stationary Engineer
- Lineman<sup>1</sup>
- Meterman<sup>1</sup>
- Wireman<sup>1</sup>

<sup>1</sup> Programs offered at Clackamas Community College through partnership with local JATC or IEC.

## Electronics Engineering Technology, AAS

**Program Code: AAS.ELECTRONENGTECH**

Program course work focuses on a traditional electronics foundation, including a basic electronics series, digital logic series, a troubleshooting series, a physics series and a semiconductor linear circuit series. The degree focuses on electronics and engineering design principles and electronics systems and is taught in a team environment whenever possible.

Specific skill areas for the Electronics Engineering Technology degree include test equipment use, computer use, problem-solving, teamwork, understanding math and electronics fundamentals and writing and oral communication.

## Oregon Tech Transfer Courses

The Industrial Technology Department, in partnership with Oregon Tech, offers a number of transferable classes into Oregon Tech's Electronics Engineering Technology degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact the Industrial Technology Department, 503-594-3318.

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-111Z Precalculus I: Functions
- Use appropriate mathematics to solve problems.

## Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

## Human Relations

- 3 credits - Recommended: PSY-101 Human Relations
- Engage in ethical communication processes that accomplish goals.

## Physical Education/Health/Safety/First Aid

- 1 course - MFG-107 Industrial Safety & First Aid
- Use effective life skills to improve and maintain mental and physical well-being.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- communicate critical information about electronic systems using verbal, written, or graphical means;
- troubleshoot electrical and electronic systems;
- analyze electronic systems;
- install or build electronic and electromechanical systems;
- use proper electrical test equipment to test and maintain electronic and electrical components and equipment;
- demonstrate safe work habits around electricity and electronic equipment.

## Requirements

### First Year

First Term		Credits
EET-112	Electronic Equipment and Assembly I	1
EET-137	Electrical Fundamentals I	4
EET-139	Principles of Troubleshooting I	2
EET-157	Digital Logic I	3
SM-150	Semiconductor Processing I	2
WR-121Z	Composition I	4
<b>Credits</b>		<b>16</b>

### Second Term

EET-113	Electronic Equipment and Assembly II	1
EET-141	Electrical Fundamentals II	4
EET-257	Digital Logic II	3
IMT-120	Industrial Machinery I	3
MTH-111Z	Precalculus I: Functions	4
<b>Credits</b>		<b>15</b>

### Third Term

EET-114	Electronic Equipment and Assembly III	1
EET-142	Electrical Fundamentals III	4
EET-254	Introduction to Microcontrollers	3
IMT-223	Instrumentation & Controls	3
MTH-112Z	Precalculus II: Trigonometry	4
<b>Credits</b>		<b>15</b>

### Second Year

#### Fourth Term

EET-127	Semiconductor Circuits I	2
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EET-215	Technical Mechanics	3
EET-239	Principles of Troubleshooting II	2
MFG-107	Industrial Safety & First Aid	3
HD-209	Job Search Skills	1
<b>Electives (p. 150)</b>		<b>3-5</b>

**Credits 14-16**

### Fifth Term

Select one of the following:		3
CDT-103	Computer-Aided Drafting I	
CDT-108A	Introduction to SolidWorks	
CDT-223	Inventor Fundamentals	
EET-225	Mechatronics I	2
EET-227	Semiconductor Circuits II	3
EET-233	Programmable Logic Controllers I	3
MFG-209	Programming & Automation for Manufacturing	3
<b>Electives (p. 150)</b>		<b>3-5</b>

**Credits 17-19**

### Sixth Term

EET-234	Programmable Logic Controllers II	3
EET-235	Mechatronics II	2
EET-250	Linear Circuits	3
SM-280	Electronics & Microelectronics/CWE	4
<b>Human Relations requirement (p. )</b>		<b>3</b>
PSY-101	Human Relations (Recommended)	
<b>Electives (p. 150)</b>		<b>3-5</b>

**Credits 18-20**

**Total Credits 95-101**

## Electives

Any CDT (p. 264), EET (p. 274), MFG (p. 302), MET (p. 302), RET (p. 326), SM (p. 274), or WLD (p. 332) course not included in the program.

## Recommended Electives

Code	Title	Credits
CS-140	Introduction to Operating Systems	4
CS-161	Computer Science I	4
MFG-140	Principles of Fluid Power	3
MFG-219	Robotics	3
MTH-251	Calculus I <sup>1</sup>	5
PH-211	General Physics With Calculus <sup>1</sup>	5
PH-212	General Physics With Calculus <sup>1</sup>	5
PH-213	General Physics With Calculus <sup>1</sup>	5
WR-227Z	Technical Writing	4

<sup>1</sup> Recommended for students who plan to transfer to Oregon Tech. Oregon Tech will also accept PH-201 General Physics, PH-202 General Physics, and PH-203 General Physics. Students should contact Oregon Tech about transferability of these classes.



## Careers

Career opportunities include:

- engineering technician
- manufacturing equipment technician
- field services technician
- operators and processors with large and small employers in high-tech industries

## Emergency Management Professional, AAS

Program Code: AAS.EMP

Help build a culture of preparedness and ready communities for catastrophic disasters with the Emergency Management Professional (EMP) AAS at CCC. This program is ideal for incumbent workers looking to benchmark their experience while engaging in meaningful learning opportunities. The degree is also designed to provide the foundational skills to enter the field of homeland security and emergency management.

The EMP AAS guides students to understanding the interactions between the evolving social, built, and physical environments that are creating greater risk complexities. Through a diverse curriculum, students will identify what foundations are needed for emergency management professionals to address evolving risks.

For information contact Dan LoFaro, 503#594#3683 or [daniel.lofaro@clackamas.edu](mailto:daniel.lofaro@clackamas.edu)

## Outcomes

### Related Instruction Outcomes

#### Computation

- 4 credits - See [Related Instruction \(p. \)](#) for course list
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-227Z Technical Writing
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 1 course - COMM-218Z Interpersonal Communication
- Engage in ethical communication processes that accomplish goals

#### Physical Education/Health/Safety/First Aid

- 1 credit - See [Related Instruction \(p. \)](#) for course list
- Use effective life skills to improve and maintain mental and physical wellbeing

## Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate critical thinking to identify and reduce disaster risk through a proactive, anticipatory and innovative approach for guiding public policy and the application of homeland security and emergency management framework and principles;

- identify the social determinants of risk, as both the risks for and the effects of disasters are socially produced;
- demonstrate knowledge in scientific processes, geographic configurations, social-cultural issues and interdependent relationships as they pertain to emergency management;
- explain communication and facilitation modes including evolving technologies and methods for disaster risk awareness, assessment, measurement and reduction for a broad spectrum of stakeholders;
- identify civic and legal processes, ethical considerations, policies and politics important in Emergency Management;
- develop an individual learning development plan.

## Requirements

### First Year

Fall Term		Credits
EMP-201	Introduction to Homeland Security and Emergency Management	4
EMP-202	Threat and Hazard Assessment for Emergency Management Professionals	3
EMP-204	Foundations of Emergency Planning	4
Computation requirement (p. )		4
<b>Credits</b>		<b>15</b>

### Winter Term

COMM-218Z	Interpersonal Communication	4
EMP-206	Hazard Mitigation	3
EMP-208	Disaster Response and Recovery	4
EMP-222	Terrorism Awareness and Response	2
EMP-224	Science of Disasters	2
<b>Credits</b>		<b>15</b>

### Spring Term

EMP-210	Developing and Managing Volunteer Resources	4
EMP-212	Public Health and Medical Emergency Management	3
EMP-214	Technology in Emergency Management	4
EMP-216	Emergency Management Laws and Ethics	2
Elective (100 level or above) <sup>1</sup>		2-4
<b>Credits</b>		<b>15-17</b>

### Second Year

#### Fall Term

EMP-218	Public Information Officer and External Affairs	2
GIS-101	Principles of Geospatial Technology	2
WR-227Z	Technical Writing	4
Focus Area Courses (p. 152)		7
<b>Credits</b>		<b>15</b>

#### Winter Term

COMM-140	Introduction to Intercultural Communication	4
EMP-220	Introduction to Emergency Management Public Administration and Policy	2
Focus Area Courses (p. 152)		9
<b>Credits</b>		<b>15</b>



**Spring Term**

EMP-226	Business Continuity Fundamentals	4
PE/Health/Safety/First Aid requirement (p. )		1
Focus Area Courses (p. 152)		10
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>90-92</b>

<sup>1</sup> Students who have not satisfied WR-121Z Composition I or equivalent should take it in spring term.

**Focus Areas**

Complete all courses from one of the following Focus Areas

**Wildland Fire**

Code	Title	Credits
FRP-130	Introduction to Wildland Firefighting (S-130/S-190/ICS-100/IS-700/L-180)	2
FRP-131	Advanced Firefighter Training (S-131/S-133)	1
FRP-200	Basic Incident Command System (I-100, I-200, IS-700, IS-800)	4
FRP-211	Portable Pumps and Water Use (S-211)	2
FRP-244	Wilderness II: Basic Land Navigation (S-244)	3
FRP-246	Wilderness IV: Backcountry CPR/First Aid/AED	2
FRP-249	Followership to Leadership (L-280)	2
FRP-250	Wilderness VI: Basic Tool Use and Care	1
FRP-270	Basic Air Operations (S-270)	1
FRP-294	Intermediate Incident Command System (I-300)	2
Any BA, CJA, EC, EMP, EMT, FRP, GIS, or HS course not included in the program		6

**Emergency Medical Technician**

Code	Title	Credits
BI-231	Human Anatomy & Physiology I	4
EMT-101	Emergency Medical Technician Part I	6
EMT-102	Emergency Medical Technician Part II	6
EMT-105	Introduction to Emergency Medical Services	3
EMT-109	Emergency Response Communication/Documentation	2
MA-110	Medical Terminology	4
Any BA, CJA, EC, EMP, EMT, FRP, GIS, or HS course not included in the program		1

**Management**

Code	Title	Credits
BA-120	Project Management Fundamentals	4
BA-123	Leadership & Motivation	3
BA-223	Principles of Marketing	4
BA-224	Human Resource Management	4
BA-251	Supervisory Management	3
PSY-101	Human Relations	3
Any BA, CJA, EC, EMP, EMT, FRP, GIS, or HS course not included in the program		5

**Fire Service Administration**

Code	Title	Credits
FRP-200	Basic Incident Command System (I-100, I-200, IS-700, IS-800)	4
FST-202	Principles of Emergency Services	3
FST-204	Fire Protection Systems	3
FST-206	Fire Behavior and Combustion	3
FST-212	Fire Prevention	3
FST-214	Building Construction for Fire Protection	3
FST-216	Principles of Fire and Emergency Services Safety and Survival	3
Any BA, CJA, EC, EMP, EMT, FRP, GIS, or HS course not included in the program		4

**Geographic Information Systems (GIS)**

Code	Title	Credits
BA-120	Project Management Fundamentals	4
GEO-100	Introduction to Physical Geography	4
GIS-101	Principles of Geospatial Technology	2
GIS-201	Introduction to Geographic Information Systems	3
GIS-202	Intermediate Geographic Information Systems	3
GIS-205	Cartography and Map Making	3
GIS-232	Data Collection & Application	2
GIS-238	GIS Web Mapping and Services	2
Any BA, CJA, EC, EMP, EMT, FRP, GIS, or HS course not included in the program		3

**Criminal Justice**

Code	Title	Credits
CJA-101	Criminology	4
CJA-110	Introduction to Law Enforcement	3
CJA-122	Criminal Law	4
PSY-219	Introduction to Abnormal Psychology	4
SOC-204	Introduction to Sociology	4
Any BA, CJA, EC, EMP, EMT, FRP, GIS, or HS course not included in the program		7

**Careers**

Career opportunities include:

- emergency management directors
- emergency management coordinators
- emergency management specialists

**Horticulture, AAS**

**Program Code: AAS.HORT1**

The Horticulture Department provides quality education and training for industry and community members. Greenhouse, nursery, landscape, arboriculture, and organic farming courses integrate technical knowledge, critical thinking and environmental stewardship.

Horticulture is a hands-on, project-based curriculum with a variety of lecture-lab style classes where students practice industry related skills and experience growing and caring for plants in all seasons

throughout the year. Learning activities involve students in the day-to-day operation of a wide range of power and hand tools used in the trade, including: mowers, rototillers, tractors, skid steer loader, pruning tools and greenhouse equipment. Students cultivate plants in CCC's extensive farm, ornamental gardens and greenhouse facilities. This degree sets a foundation for general horticulture, while allowing students to "choose their own adventure" with a wide selection of elective courses that meet their interests.

Students may begin this program any term, although a fall start is recommended. Following the course offerings in the order listed will allow for completion in the one or two-year period.

## Oregon State University Transfer Agreement

Some horticulture classes transfer to Oregon State University as part of a bachelor's degree. Horticulture students planning to continue their studies at a four-year college should consult the Horticulture advisor to obtain the most recent transfer information.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or [april.chastain@clackamas.edu](mailto:april.chastain@clackamas.edu).

Code	Title	Credits
<b>OSU Transfer Courses</b>		
HOR-112	Horticulture Career Exploration	2
HOR-215	Herbaceous Perennials	3
HOR-226	Plant Identification/Fall	4
HOR-228	Plant Identification/Spring	4

Note: Many of the horticulture courses will also transfer as Lower Division Collegiate (LDC) credits.

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - BA-285 Human Relations in Business or COMM-100Z Introduction to Communication
- Engage in ethical communication processes that accomplish goals.

#### Physical Education/Health/Safety/First Aid

- 1 course - HOR-115 Horticulture Safety
- Use effective life skills to improve and maintain mental and physical well-being.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate a broad range of skills in the production and maintenance of plants, including: safe use of tools and equipment, propagation from seeds and cuttings, landscape maintenance activities, growing in a greenhouse environment, and vegetable bed preparation;
- identify common woody plants in the landscape;
- recognize and evaluate key pests and propose solutions based on IPM strategies;
- use a basic understanding of plant biology and soil science to make sound decisions in the production and maintenance of plants;
- display effective decision making, time management and project management skills in the horticulture industry;
- communicate effectively with co-workers and customers through speaking, writing and computer technology.

## Requirements

First Year		Credits
<b>Fall Term</b>		
HOR-111	Horticulture Practicum/Fall	2
HOR-115	Horticulture Safety	1
HOR-223	Applied Plant Science	4
HOR-226	Plant Identification/Fall	4
Select one of the following:		4-5
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
Higher Level Math or Statistics		
<b>Credits</b>		<b>15-16</b>
<b>Winter Term</b>		
FYE-101	First Year Experience Level I	2
HOR-133	Horticulture Practicum/Winter	2
HOR-216	Integrated Pest Management	3
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	4
HOR-230	Equipment Operation & Maintenance	2
<b>Credits</b>		<b>15</b>
<b>Spring Term</b>		
HOR-112	Horticulture Career Exploration	2
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-143	Horticulture Practicum/Spring	2
HOR-228	Plant Identification/Spring	4
WR-101 or WR-121Z	Workplace Writing or Composition I	4
<b>Credits</b>		<b>16</b>
<b>Summer Term</b>		
HOR-281 or HOR-280 and HOR-282	Horticulture/CWE or Horticulture/CWE and Horticulture/ CWE	6
<b>Credits</b>		<b>6</b>
<b>Second Year</b>		
<b>Fall Term</b>		
BA-285 or COMM-100Z	Human Relations in Business or Introduction to Communication	4

HOR-235	Weed Identification	2
or HOR-236	or Insect Identification	
SPN-101	First-Year Spanish I	4
Production and Management Focus Area courses (p. 155)		2-3
Electives (p. 154)		3
<b>Credits</b>		<b>15-16</b>
<b>Winter Term</b>		
BA-101	Introduction to Business	4
BA-119	Project Management Practices	2
HOR-231	Irrigation Design	3
HOR-237	Disease Identification	2
Production and Management Focus Area courses (p. 155)		3
Electives (p. 154)		3
<b>Credits</b>		<b>17</b>
<b>Spring Term</b>		
HOR-240	Irrigation Practices	3
Production and Management Focus Area courses (p. 155)		2-4
Electives (p. 154)		8
<b>Credits</b>		<b>13-15</b>
<b>Total Credits</b>		<b>97-101</b>

## Production and Management Focus Area

Code	Title	Credits
<b>Arboriculture</b>		
HOR-262	Treework Practicum I	2
HOR-131	Tree & Shrub Pruning	3
HOR-261	Tree Diagnostics	2
<b>Greenhouse/Nursery</b>		
HOR-130	Plant Propagation Techniques	3
HOR-122	Greenhouse I	3
HOR-142	Greenhouse II	3
<b>Landscape</b>		
HOR-224	Landscape Installation	3
HOR-131	Tree & Shrub Pruning	3
HOR-123	Landscape Maintenance	3
<b>Organic Farming</b>		
HOR-113	Organic Farming Practicum/Fall	3
HOR-136	Organic Farming Practicum/Winter	3
HOR-141	Organic Farming Practicum/Spring	4

## Electives

Code	Title	Credits
<b>Summer</b>		
HOR-146	Fruit & Berry Growing	3
HOR-211	Native Plant Identification	1
HOR-284	Organic Farming Practicum/Summer	3
<b>Fall</b>		
HOR-113	Organic Farming Practicum/Fall	3
HOR-124	Food Harvest	3
HOR-130	Plant Propagation Techniques	3
HOR-224	Landscape Installation	3
HOR-225	Arboriculture I	3
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
HOR-252	Kitchen Herbs	1
HOR-262	Treework Practicum I	2
<b>Winter</b>		
HOR-122	Greenhouse I	3
HOR-131	Tree & Shrub Pruning	3
HOR-136	Organic Farming Practicum/Winter	3
HOR-229	Introduction to Landscape Design	3
HOR-239	Tree Climber Training	1
HOR-251	Herbal Products	1
HOR-260	Arboriculture II	3
HOR-290	Special Topics in Horticulture	1-3
<b>Spring</b>		
HOR-123	Landscape Maintenance	3
HOR-126	Landscape Water Features <sup>1</sup>	1
HOR-127	Landscape Lighting <sup>1</sup>	1
HOR-128	Landscape Stones & Pavers <sup>1</sup>	1
HOR-129	Landscape Decks & Fences <sup>1</sup>	1
HOR-135	Propagation of Edible Plants	3
HOR-141	Organic Farming Practicum/Spring	4

Code	Title	Credits
HOR-142	Greenhouse II	3
HOR-215	Herbaceous Perennials	3
HOR-234	Advanced Landscape Design <sup>1</sup>	3
HOR-244	Ecological Landscape Design <sup>1</sup>	3
HOR-246	Organic Farming and Gardening	2
HOR-250	Herb Growing and Gardening	1
HOR-261	Tree Diagnostics	2
<b>Multiple Terms</b>		
BA-223	Principles of Marketing	4
HOR-281	Horticulture/CWE	6
or HOR-280 & HOR-282	Horticulture/CWE and Horticulture/CWE	
WET-109	Backflow Assembly Operation and Testing	4

<sup>1</sup> Offered alternate years.

## Careers

Career opportunities include:

- nursery and garden center assistant manager and associate
- nursery production
- greenhouse assistant grower
- organic food production
- supply and equipment sales
- landscape design
- installation and maintenance worker
- parks department personnel
- groundskeeper

## Human Services Generalist, AAS

**Program Code: AAS.HUMANSERVEN**

Both the one-year [Human Services Generalist Certificate \(p. 197\)](#) and the two-year AAS offer training for entry-level positions in diverse social services agencies. The degree combines academic course work with supervised field experience. In addition to general course work in human services, students may select a variety of approved elective certificates/courses to focus on different concentration areas.

For information contact Yvonne Smith, 503-594-3207 or [yvonne@clackamas.edu](mailto:yvonne@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or MTH-098 College Math Foundations
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

## Human Relations

- 1 course - HS-156 Conducting Human Service Interviews
- Engage in ethical communication processes that accomplish goals

## Physical Education/Health/Safety/First Aid

- 1 course - HE-163 Body & Drugs I: Introduction to Abuse & Addiction
- Use effective life skills to improve and maintain mental and physical wellbeing.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- complete human service assessments that include client strengths and challenges as well as the scope of conditions that promote or inhibit human functioning;
- apply knowledge about the history, development and function of individuals, families and other systems;
- practice professional communication skills both verbally and in writing in a human services setting;
- adhere to the professional ethics, attitudes and values necessary for effective human service work;
- analyze the context and the role of diversity in determining and meeting people's needs;
- demonstrate awareness of personal values, beliefs, goals, strengths and limitations;
- demonstrate a range of appropriate human service skills in a field setting.

## Requirements

### First Year

Fall Term		Credits
HDF-260	Understanding Child Abuse and Neglect	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HS-100	Introduction to Human Services	3
WR-101 or WR-121Z	Workplace Writing or Composition I	4
Electives (p. 156)		3
<b>Credits</b>		<b>16</b>

### Winter Term

HS-103	Ethics for Human Service Workers	2
HS-154	Community Resources	3
Select one of the following:		4
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
MTH-098	College Math Foundations	
PSY-215	Introduction to Developmental Psychology	4
Electives (p. 156)		2
<b>Credits</b>		<b>15</b>

### Spring Term

HDF-140 or SOC-210	Contemporary American Families or Marriage, Family, & Intimate Relations	3-4
HS-156	Conducting Human Service Interviews	3
HS-170	Preparation for Field Experience in Human Services	1

HS-206	Trauma Informed Practices	3
Electives (p. 156)		5
<b>Credits</b>		<b>15-16</b>

### Second Year

#### Fall Term

CJA-214 or CJA-215	Intimate Partner Violence or Sexual Abuse and Human Trafficking	3
HS-210	Motivational Interviewing	3
HS-270	Human Services Practicum Seminar	2
HS-280	Human Services Generalist I: CWE/ Practicum	4

Electives (p. 156)		3
<b>Credits</b>		<b>15</b>

#### Winter Term

HS-256	Advanced Interviewing Skills With Theory	3
HS-270	Human Services Practicum Seminar	2
HS-281	Human Services Generalist II: CWE/ Practicum	4
SOC-205	Social Stratification & Social Systems	4

Electives (p. 156)		2
<b>Credits</b>		<b>15</b>

#### Spring Term

HS-216	Group Counseling Skills	3
HS-232	Case Management	3
HS-270	Human Services Practicum Seminar	2
HS-282	Human Services Generalist III: CWE/ Practicum	4

Electives (p. 156)		3
<b>Credits</b>		<b>15</b>

**Total Credits** **91-92**

## Electives

Any course from the following programs not included in the program: **Gerontology (p. 193)**, **Gerontology for Health Care Professionals (p. 219)**, **Nursing Assistant - Gerontology Specialist (p. 224)**, **Juvenile Corrections (p. 200)**, or **Early Childhood Education & Family Studies**.

Any course numbered 100 or above in the following prefixes not included in the program: **ASL (p. 238)**, **CJA (p. 265)**, **COMM (p. 260)**, **ECE (p. 270)**, **ED (p. 273)**, **FR (p. 286)**, **FYE (p. 285)**, **GER (p. 289)**, **GRN (p. 290)**, **HD (p. 295)**, **HDF (p. 296)**, **HS (p. 297)**, **MA (p. 305)**, **MTH (p. 303)**, **PSY (p. 325)**, **SOC (p. 328)**, **SPN (p. 328)**, **STAT, WR (p. 335)**, or **WS (p. 334)**

Any of the following courses:

Code	Title	Credits
HE-164	Body & Drugs II: Alcohol	3
HE-252	First Aid/CPR/AED	3
HE-263	Body & Drugs III: Marijuana	3
HE-264	Body & Drugs IV: Other Drugs, Other Addictions	3

## Careers

Career opportunities include:

- case managers and assistants
- resource specialists
- family advocates
- client advocates
- intake workers
- family assistance workers
- volunteer coordinators

- effectively apply computer technology to the automation and control of manufacturing and building systems;
- communicate effectively through graphical means including schematics, diagrams, engineering drawing and sketches to determine system functions to effect repairs and improve performance.

## Industrial Maintenance Technology, AAS

Program Code: AAS.INDMAINTECH

Industrial Maintenance Technology (IMT) is a program that prepares students to succeed as maintenance technicians in industry. IMT graduates perform mechanical and electrical maintenance of manufacturing equipment such as machine tools, automated process equipment and buildings systems to keep production operational. Maintenance technicians study subjects from a wide variety of technical disciplines ranging from welding to industrial electronics to robotics. This is a high-wage, high-demand field that typically attracts talented people who are excellent problem solvers and enjoy challenging work.

For information contact Mike Mattson, 503-594-3322 or [mattsonm@clackamas.edu](mailto:mattsonm@clackamas.edu).

### Outcomes

#### Related Instruction Outcomes

##### Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems.

##### Communication

- 1 course - WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

##### Human Relations

- 3 credits - See [Related Instruction \(p. \)](#) for course list
- Engage in ethical communication processes that accomplish goals.

##### Physical Education/Health/Safety/First Aid

- 3 credits - MFG-107 Industrial Safety & First Aid
- Use effective life skills to improve and maintain mental and physical well-being.

### Program Outcomes

Upon successful completion of this program, students should be able to:

- work safely in an industrial environment around machinery, power equipment, heat, chemicals and electricity;
- troubleshoot, install and repair complex electromechanical systems by using knowledge of electrical and mechanical fundamentals, diagnostic instruments, and hand and power tools;
- use knowledge of manufacturing and welding processes to execute the repair and replacement of machine elements;

## Requirements

First Year		Credits
<b>Fall Term</b>		
EET-139	Principles of Troubleshooting I	2
IMT-104	Reading Schematics and Symbols	2
MFG-103	Machining for Fabrication & Maintenance	3
MFG-130	Basic Electricity I	3
MTH-050	Technical Mathematics I <sup>1</sup>	4
<b>Credits</b>		<b>14</b>
<b>Winter Term</b>		
IMT-120	Industrial Machinery I	3
MFG-109	Computer Literacy for Technicians	3
MFG-131	Basic Electricity II	3
MFG-140	Principles of Fluid Power	3
MTH-080	Technical Mathematics II <sup>1</sup>	3
Human Relations requirement (p. )		3
<b>Credits</b>		<b>18</b>
<b>Spring Term</b>		
IMT-110	Preventative Maintenance	2
IMT-220	Industrial Machinery II	3
MFG-107	Industrial Safety & First Aid	3
MFG-132	Basic Electricity III	3
MFG-221	Materials Science	3
WR-101	Workplace Writing <sup>1</sup>	4
<b>Credits</b>		<b>18</b>
<b>Second Year</b>		
<b>Fall Term</b>		
EET-215	Technical Mechanics	3
EET-239	Principles of Troubleshooting II	2
IMT-108	Rigging and Lifting	2
WLD-150	Welding Processes	4
Electives (p. 158)		3
<b>Credits</b>		<b>14</b>
<b>Winter Term</b>		
EET-225	Mechatronics I	2
EET-233	Programmable Logic Controllers I	3
IMT-230	Introduction to Heating, Ventilation, and Air Conditioning	3
MFG-209	Programming & Automation for Manufacturing	3
CDT Electives (p. 158)		3
Electives (p. 158)		3
<b>Credits</b>		<b>17</b>
<b>Spring Term</b>		
EET-234	Programmable Logic Controllers II	3
EET-235	Mechatronics II	2



HD-209 or MFG-280	Job Search Skills or Manufacturing Technology/CWE	3-4
IMT-223	Instrumentation & Controls	3
MET-170	Introduction to Manufacturing Processes	3
MFG-219	Robotics	3
<b>Credits</b>		<b>17-18</b>
<b>Total Credits</b>		<b>98-99</b>

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

## CDT Electives

Any [CDT \(p. 264\)](#) course not included in the program.

## Electives

Any [CDT \(p. 264\)](#), [EET \(p. 274\)](#), [GIS \(p. 287\)](#), [MET \(p. 302\)](#), [MFG \(p. 302\)](#), [MTT \(p. 300\)](#), [SM \(p. 274\)](#), or [WLD \(p. 332\)](#) course not included in the program, or other technical course with approval.

## Careers

Career opportunities include:

- maintenance mechanics
- millwrights
- process technicians
- maintenance machinists
- building engineers
- robotics technicians
- industrial electrician apprentices

# Industrial Mechanics and Maintenance Technology Apprenticeship, AAS

**Program Code:** AAS.MACHINIST

**Trade:** Machinist

**6000 BOLI-ATD Trades**

Registered Apprenticeship in the machinist trades or occupations is a method of career and technical related training leading to certification and journey-level status.

This is a limited-entry program for registered apprentices who are sponsored by individual employers, accepted by a Joint Apprenticeship and Training Committee (JATC) or NW Willamette Trades Apprenticeship and Training Committee (TATC) and registered with the State of Oregon Bureau of Labor & Industries (BOLI).

Clackamas Community College offers three state-wide Apprenticeship degrees and their stackable Certificates of Completion and Career Pathway Certificates of Completion. These parent degrees are: [Electrician](#)

[Apprenticeship Technologies AAS \(p. 147\)](#), [Construction Trades General Apprenticeship AAS \(p. 137\)](#), and [Industrial Mechanics and Maintenance Technology Apprenticeship AAS \(p. 158\)](#). These degrees do not guarantee licensure.

This program is articulated with Oregon Institute of Technology (OIT), which requires a higher-level math course than is required for the program. Contact an Apprenticeship Advisor at CCC for help with transfer to OIT.

For more information visit the [Apprenticeship webpage](#), or contact an Apprenticeship Advisor at 503-594-0959 or [apprenticeship.advising@clackamas.edu](mailto:apprenticeship.advising@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-080 Technical Mathematics II
- Use appropriate mathematics to solve problems

#### Communication

- 3-4 credits - See [Related Instruction \(p. \)](#) for course list
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 3-4 credits - See [Related Instruction \(p. \)](#) for course list
- Engage in ethical communication processes that accomplish goals

#### Physical Education/Health/Safety/First Aid

- 1-3 credits - See [Related Instruction \(p. \)](#) for course list
- Use effective life skills to improve and maintain mental and physical wellbeing

## Program Outcomes

Upon successful completion of this program, students should be able to:

### Machinery Operation and Maintenance

- demonstrate the functions of trade-specific industrial systems;
- define lubrication processes with trade-specific industrial materials and equipment;
- identify mechanical and/or electrical industrial systems;
- demonstrate the proper care, use and storage of hand and power tools;
- develop machine shops skills in troubleshooting.

### Fabrication

- read and interpret trade-specific industrial blueprints;
- perform trade-specific welding applications;
- analyze the properties of materials and how they apply to trade-specific fabricating applications;
- fabricate industrial materials in appropriate trade-specific applications.

### Mathematics of the Trade

- calculate elementary algebraic equations and formulas;
- apply appropriate formulas to mathematical situations.

## Safety

- demonstrate safe working practices in accordance with state and federal regulations;
- apply standardized OSHA practices to specific trade applications;
- describe procedures for proper removal and disposal of hazardous materials

## Requirements

Code	Title	Credits
	Journey Level Card from Oregon BOLI <sup>1</sup>	22
	Communication requirement (p. )	3-4
	Human Relations requirement (p. )	3-4
	PE/Health/Safety/First Aid requirement (p. )	1-3
	Elective (100 level or above)	25-21
APR-104MA	Print Reading	3
APR-106MA	Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing	3
APR-111MA	Manual Machining I	4
APR-112MA	Manual Machining II	4
APR-113MA	Manual Machining III	4
APR-201MA	CNC I: Set-Up and Operation	4
APR-202MA	CNC II: Programming and Operation	4
APR-203MA	CNC III: Applied Programming and Operation	4
APR-254MA	Mill/Turn Machining	3
MTH-080	Technical Mathematics II	3
<b>Total Credits</b>		<b>90</b>

<sup>1</sup> Students who obtain a State of Oregon Apprenticeship Training Journey Level Card or Oregon Bureau of Labor and Industries Apprenticeship and Training Division (BOLI-ATD) Certificate of Completion will earn 22 Credits.

## Careers

- Machinist<sup>1</sup>
- Programmable Logic Controller
- Industrial Mobile Mechanic

<sup>1</sup> Programs offered at Clackamas Community College through NW Willamette TATC

## Landscape Management, AAS

**Program Code:** AAS.LANDSCAPEMGMT

The Landscape Management degree prepares students for entry-level management positions in the landscaping industry by providing them business, communication and project management skills in addition to a basic understanding of, and hands-on experience with, the activities involved in the installation and maintenance of landscapes.

Sustainable practices, such as the use of Integrated Pest Management, water-efficient landscapes, and techniques that protect and care for the soil are emphasized throughout the program. Students use industry standard equipment and practices in the care of CCC's extensive landscape facilities, including an arboretum, water-efficient demonstration garden, large turf areas, and several annual, herbaceous

perennial and shrub beds. CCC's landscape program is the only one in Oregon accredited by the National Association of Landscape Professionals (NALP). Students have the opportunity to compete on the team that attends NALP's National Collegiate Landscape Competition each year.

Students completing the Landscape Management AAS with a 2.5 GPA or higher are eligible to take the Oregon Landscape Contractors License exam.

Following the course offerings in the order listed is not required, but will allow for completion in a two-year period.

## Oregon State Transfer Agreement

Some horticulture classes transfer to Oregon State University as part of a bachelor's degree. Landscape students planning to continue their studies at a four-year college should consult the Horticulture advisor to obtain the most recent transfer information.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or [april.chastain@clackamas.edu](mailto:april.chastain@clackamas.edu).

## OSU Transfer Courses

Code	Title	Credits
HOR-112	Horticulture Career Exploration	2
HOR-215	Herbaceous Perennials	3
HOR-226	Plant Identification/Fall	4
HOR-228	Plant Identification/Spring	4

Note: Many of the horticulture courses will also transfer as Lower Division Collegiate (LDC) credits.

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - BA-285 Human Relations in Business or COMM-100Z Introduction to Communication
- Engage in ethical communication processes that accomplish goals.

#### Physical Education/Health/Safety/First Aid

- 1 course - HOR-115 Horticulture Safety
- Use effective life skills to improve and maintain mental and physical wellbeing.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate competency in sustainable landscape maintenance and installation activities, including: safe use of tools and equipment, operation of irrigation systems, pruning and training techniques, turf maintenance, hardscape installation and reading/installing from a design plan;
- identify common woody and herbaceous plants in the landscape;
- recognize and evaluate key pests in the landscape and propose solutions based on integrated pest management (IPM) strategies;
- use a basic understanding of plant biology and soil science to make sound decisions in the design and maintenance of landscapes;
- display effective decision making, time management and project management skills in the landscape industry environment;
- effectively communicate with co-workers and customers through speaking, writing and computer technology.

## Requirements

### First Year

Fall Term		Credits
HOR-111	Horticulture Practicum/Fall	2
HOR-115	Horticulture Safety	1
HOR-223	Applied Plant Science	4
HOR-226	Plant Identification/Fall	4
Select one of the following:		4-5
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
Higher Level Math or Statistics		
<b>Credits</b>		<b>15-16</b>

### Winter Term

FYE-101	First Year Experience Level I	2
HOR-131	Tree & Shrub Pruning	3
HOR-133	Horticulture Practicum/Winter	2
HOR-216	Integrated Pest Management	3
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	4
<b>Credits</b>		<b>16</b>

### Spring Term

BA-285	Human Relations in Business or Introduction to Communication	4
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-143	Horticulture Practicum/Spring	2
HOR-215	Herbaceous Perennials	3
HOR-228	Plant Identification/Spring	4
<b>Credits</b>		<b>17</b>

### Summer Term

HOR-281	Horticulture/CWE	6
or HOR-280	or Horticulture/CWE <i>and</i> Horticulture/	
<i>and</i> HOR-282	CWE	
<b>Credits</b>		<b>6</b>

### Second Year

Fall Term		Credits
HOR-224	Landscape Installation	3

HOR-235	Weed Identification	2
or HOR-236	or Insect Identification	
SPN-101	First-Year Spanish I	4
WR-101	Workplace Writing	4
or WR-121Z	or Composition I	

**Credits 13**

### Winter Term

BA-119	Project Management Practices	2
HOR-229	Introduction to Landscape Design	3
HOR-230	Equipment Operation & Maintenance	2
HOR-231	Irrigation Design	3
HOR-237	Disease Identification	2
<b>Electives (p. 160)</b>		<b>3</b>

**Credits 15**

### Spring Term

BA-101	Introduction to Business	4
HOR-123	Landscape Maintenance	3
Select two courses of the following:		2
HOR-126	Landscape Water Features <sup>1</sup>	
HOR-127	Landscape Lighting <sup>1</sup>	
HOR-128	Landscape Stones & Pavers <sup>1</sup>	
HOR-129	Landscape Decks & Fences <sup>1</sup>	
HOR-240	Irrigation Practices	3

**Electives (p. 160) 3**

**Credits 15**

**Total Credits 97-98**

## Electives

Code	Title	Credits
<b>Summer</b>		
HOR-146	Fruit & Berry Growing	3
HOR-211	Native Plant Identification	1
<b>Fall</b>		
HOR-225	Arboriculture I	3
<b>Winter</b>		
CDT-103	Computer-Aided Drafting I	3
HOR-239	Tree Climber Training	1
HOR-260	Arboriculture II	3
HOR-290	Special Topics in Horticulture	3
<b>Spring</b>		
HOR-126	Landscape Water Features <sup>1</sup>	1
HOR-127	Landscape Lighting <sup>1</sup>	1
HOR-128	Landscape Stones & Pavers <sup>1</sup>	1
HOR-129	Landscape Decks & Fences <sup>1</sup>	1
HOR-234	Advanced Landscape Design <sup>1</sup>	3
HOR-244	Ecological Landscape Design <sup>1</sup>	3
HOR-246	Organic Farming and Gardening	2
HOR-261	Tree Diagnostics	2
<b>Multiple Terms</b>		
BA-223	Principles of Marketing	4
WET-109	Backflow Assembly Operation and Testing	4

<sup>1</sup> Offered alternate years

## Careers

Career opportunities include:

- supervisory or skilled landscape technician position for a landscape design/build company
- irrigation specialist
- estate garden
- parks department
- arboretum
- golf course
- self-employed designer
- installation/ maintenance contractor

## Landscape Management, Arboriculture Option, AAS

**Program Code:** AAS.LANDMGMTARBOR

This degree prepares students for a career in arboriculture and urban forestry, providing the necessary knowledge base to pass the International Society of Arboriculture (ISA) Certified Arborist exam. Courses within this program are useful for both beginning students and working arborists trying to expand the breadth and depth of their knowledge. It provides a learning environment free of the demands of production arboriculture to practice techniques used in climbing, rigging, and operations management. We focus on safety, efficiency, and the reasoning behind industry standard planting, pruning, communication, tree health, and risk assessment. Students use common tree care equipment to manage CCC's arboretum and campus trees, gaining practical experience to enhance their knowledge.

Students are encouraged to start as a cohort in fall, as several classes in this program have pre- or co-requisites. Following the course offerings in the order listed allows for completion in a 2-year period, but isn't required. Part-time students should check with the Horticulture advisor to determine an appropriate schedule. Working arborists are encouraged to attend and can have the prerequisites waived for higher-level classes, with enough on-the-job experience.

## Oregon State University Transfer Agreement

Some horticulture classes transfer to Oregon State University as part of a bachelor's degree. Arboriculture students planning to continue their studies at a four-year college should consult the Horticulture advisor to obtain the most recent transfer information.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or [april.chastain@clackamas.edu](mailto:april.chastain@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - BA-285 Human Relations in Business or COMM-100Z Introduction to Communication
- Engage in ethical communication processes that accomplish goals.

#### Physical Education/Health/Safety/First Aid

- 1 course - HE-252 First Aid/CPR/AED
- Use effective life skills to improve and maintain mental and physical wellbeing.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate competency with the use of standard arboriculture equipment, including: climbing gear, chainsaw, chipper, hydraulic sprayer, truck and trailer;
- identify common woody and herbaceous plants in the landscape;
- recognize and identify key biotic and abiotic disorders in trees;
- perform site assessments, including: plant health inspections of key plants, hazard tree identification, and water audit interpretations;
- effectively communicate with co-workers and customers through speaking, report writing and computer technology.

## Requirements

First Year		
Fall Term		Credits
FYE-101	First Year Experience Level I	2
HE-252	First Aid/CPR/AED <sup>1</sup>	3
HOR-115	Horticulture Safety	1
HOR-223	Applied Plant Science	4
HOR-226	Plant Identification/Fall	4
HOR-236	Insect Identification	2
<b>Credits</b>		<b>16</b>
Winter Term		
HOR-131	Tree & Shrub Pruning	3
HOR-216	Integrated Pest Management	3
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	4
HOR-230	Equipment Operation & Maintenance	2
HOR-239	Tree Climber Training	1
<b>Credits</b>		<b>15</b>

Spring Term		
BA-285	Human Relations in Business	4
or	or Introduction to Communication	
COMM-100Z		
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-228	Plant Identification/Spring	4
WR-101	Workplace Writing	4
or WR-121Z	or Composition I	
<b>Credits</b>		<b>16</b>
Summer Term		
HOR-211	Native Plant Identification	1
HOR-280	Horticulture/CWE	3
<b>Credits</b>		<b>4</b>
Second Year		
Fall Term		
HOR-225	Arboriculture I	3
HOR-262	Treework Practicum I	2
Select one of the following:		4-5
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
Higher Level Math or Statistics		
Electives (p. 162)		3
<b>Credits</b>		<b>12-13</b>
Winter Term		
BA-119	Project Management Practices	2
HOR-229	Introduction to Landscape Design	3
HOR-237	Disease Identification	2
HOR-260	Arboriculture II	3
Electives (p. 162)		3
<b>Credits</b>		<b>13</b>
Spring Term		
HOR-123	Landscape Maintenance	3
HOR-215	Herbaceous Perennials	3
HOR-261	Tree Diagnostics	2
HOR-263	Plant Health Care Practicum	2
HOR-282	Horticulture/CWE	3
Electives (p. 162)		3
<b>Credits</b>		<b>16</b>
Summer Term		
HOR-281	Horticulture/CWE	6
<b>Credits</b>		<b>6</b>
<b>Total Credits</b>		<b>98-99</b>

<sup>1</sup> May be waived with current CPR certification

## Electives

Code	Title	Credits
Summer		
HOR-146	Fruit & Berry Growing	3
Fall		
HOR-224	Landscape Installation	3

Code	Title	Credits
HOR-235	Weed Identification	2
HOR-264	Treework Practicum II (Aerial)	2
Winter		
HOR-231	Irrigation Design	3
HOR-290	Special Topics in Horticulture	3
Spring		
HOR-240	Irrigation Practices	3
HOR-244	Ecological Landscape Design <sup>2</sup>	3
Multiple Terms		
BA-101	Introduction to Business	4
SPN-101	First-Year Spanish I	4

<sup>2</sup> Offered alternate years

## Careers

Career opportunities include:

- climbing arborist
- plant health care technician
- city forester
- grounds keeper
- plant pathologist

## Machine Tool Technology, AAS

**Program Code: AAS.MACHTECH**

Course work in machine tool technology prepares students for careers in high-tech manufacturing by producing products to exacting industrial standards utilizing current manual and computer-aided machine tool technology. Many classes are taught in a flexible, open-lab format and students may enter the program any term.

Individualized daytime and evening instruction is provided in the operation of machine tools such as: lathes, mills, surface and cylindrical grinders and common machine shop equipment. Included in the degree program is the study of computer numerical control (CNC) programming and machining for milling, turning and electrical discharge machining (EDM), as well as courses in computer-aided manufacturing (CAM) utilizing current industrial CAD/CAM software. Quality control is stressed while students are taught a wide range of measuring and inspection techniques. Other topics include courses offered in welding, materials science and basic electricity. Many students enroll in these courses to upgrade existing job skills and several of our courses satisfy the continuing education unit (CEU) requirements of local apprenticeships and trade organizations.

## SHORT TERM TRAINING

For students who need a quick-entry strategy into the workforce, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information. A short-term training certificate is available.

For information contact the Industrial Technology Department, 503-594-3318.

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3 credits - See **Related Instruction** (p. ) for course list
- Engage in ethical communication processes that accomplish goals.

#### Physical Education/Health/Safety/First Aid

- 1 course - MFG-107 Industrial Safety & First Aid
- Use effective life skills to improve and maintain mental and physical wellbeing.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- set-up and operate manual machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies;
- set-up and operate CNC machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies;
- apply computer software applications to produce manufacturing related documents, create CAD models, and generate CAM programs for machining processes;
- apply knowledge of materials, physics and mathematics to effectively machine industrial materials;
- apply critical thinking skills to solve common machining and manufacturing problems;
- work safely in an industrial environment around machinery, power tools, electricity and chemicals.

## Requirements

### First Year

Fall Term		Credits
MFG-104	Print Reading	3
MFG-107	Industrial Safety & First Aid	3
MTH-050	Technical Mathematics I <sup>1</sup>	4
MTT-111	Manual Machining I	4
MTT-121	CNC I: Set-Up and Operation	4
<b>Credits</b>		<b>18</b>

### Winter Term

MFG-109	Computer Literacy for Technicians	3
MTH-080	Technical Mathematics II	3
MTT-112	Manual Machining II	4
MTT-122	CNC II: Programming and Operation	4

Human Relations requirement (p. )	3
<b>Credits</b>	<b>17</b>

### Spring Term

MTT-113	Manual Machining III	4
MTT-123	CNC III: Applied Programming and Operation	4
MTT-141	CAD/CAM I	4
WR-101	Workplace Writing <sup>1</sup>	4

**Credits 16**

### Second Year

#### Fall Term

MFG-106	Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing	3
MFG-218	Lean Manufacturing and Quality Systems	3
MTT-241	CAD/CAM II	4
MTT-252	Macro Programming and Machine Probing	3

**Electives (p. 163) 3-4**

**Credits 16-17**

#### Winter Term

MFG-264	CMM Set-Up and Operation	2
MTT-242	CAD/CAM III	4
MTT-253	5-Axis Machining	3
MTT-268	Capstone Machining I	3

**Electives (p. 163) 3-4**

**Credits 15-16**

#### Spring Term

HD-209	Job Search Skills	3
or MFG-280	or Manufacturing Technology/CWE	
MFG-221	Materials Science	3
MTT-254	Mill/Turn Machining	3
MTT-269	Capstone Machining II	3

**Electives (p. 163) 3-4**

**Credits 15-16**

**Total Credits 97-100**

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

## Electives

Any **MFG** (p. 302) or **MTT** (p. 300) course not included in the program, or any of the following:

Code	Title	Credits
CDT-102	Sketching & Problem Solving	3
CDT-103	Computer-Aided Drafting I	3
CDT-108A	Introduction to SolidWorks	3
CDT-223	Inventor Fundamentals	3
CDT-225	Advanced SolidWorks	3
MET-170	Introduction to Manufacturing Processes	3
MFG-103	Machining for Fabrication & Maintenance	3



Code	Title	Credits
MFG-130	Basic Electricity I	3
MFG-219	Robotics	3
WLD-150	Welding Processes	4
Other technical courses with department approval		4

## Careers

Career opportunities include:

- machinist
- tool maker
- CNC programmer/operator
- CAD/CAM technicians

## Microelectronics Systems Technology, AAS

**Program Code:** AAS.MICROSYSTECH

This program prepares students for entry into the microelectronics and semiconductor industries. Course work focuses on wafer manufacturing, integrated circuit fabrication, component manufacturing, microelectronic assembly and equipment maintenance. Specific skill areas include: silicon materials fabrication, silicon manufacturing, semiconductor processing, microcontamination and particle control, troubleshooting of equipment and systems, microlithography, ion implantation, etch and chemical vapor deposition.

## Oregon Tech Transfer Courses

The Industrial Technology Department, in cooperation with Oregon Tech, offers a number of transferable microelectronics classes into Oregon Tech's Electronics Engineering Technology degree program.

For information contact the Industrial Technology Department, 503-594-3318.

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-095 Algebra III
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3 credits - See [Related Instruction](#) (p. ) for course list
- Engage in ethical communication processes that accomplish goals.

#### Physical Education/Health/Safety/First Aid

- 1 course - MFG-107 Industrial Safety & First Aid
- Use effective life skills to improve and maintain mental and physical wellbeing.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- communicate critical information about electronic systems using verbal, written, or graphical means;
- troubleshoot electrical and electronic systems;
- use proper electrical test equipment to test and maintain electronic and electrical components and equipment;
- demonstrate safe work habits around electricity and electronic equipment;
- demonstrate basic knowledge of semiconductor manufacturing and materials.

## Requirements

First Year		Credits
First Term		
EET-112	Electronic Equipment and Assembly I	1
EET-137	Electrical Fundamentals I	4
EET-139	Principles of Troubleshooting I	2
EET-157	Digital Logic I	3
MTH-095	Algebra III	4
SM-150	Semiconductor Processing I	2
<b>Credits</b>		<b>16</b>
Second Term		
EET-113	Electronic Equipment and Assembly II	1
EET-141	Electrical Fundamentals II	4
IMT-120	Industrial Machinery I	3
MFG-107	Industrial Safety & First Aid	3
SM-160	Semiconductor Processing II	2
WR-101	Workplace Writing <sup>1</sup>	4
<b>Credits</b>		<b>17</b>
Third Term		
EET-114	Electronic Equipment and Assembly III	1
EET-142	Electrical Fundamentals III	4
IMT-223	Instrumentation & Controls	3
SM-170	Semiconductor Processing III	2
SM-280	Electronics & Microelectronics/CWE	2
Human Relations requirement (p. )		3
<b>Credits</b>		<b>15</b>
Second Year		
Fourth Term		
EET-127	Semiconductor Circuits I	2
EET-215	Technical Mechanics	3
EET-239	Principles of Troubleshooting II	2
HD-209	Job Search Skills	1
IMT-104	Reading Schematics and Symbols	2
Electives (p. 165)		3
<b>Credits</b>		<b>13</b>
Fifth Term		
EET-227	Semiconductor Circuits II	3
EET-233	Programmable Logic Controllers I	3
ESH-100	Environmental Regulations	2
MFG-140	Principles of Fluid Power	3

MFG-209	Programming & Automation for Manufacturing	3
SM-136	Photolithography	2
<b>Credits</b>		<b>16</b>
<b>Sixth Term</b>		
CH-104	Introductory Chemistry	5
EET-250	Linear Circuits	3
SM-229	Vacuum Technology	2
SM-280	Electronics & Microelectronics/CWE	2
Electives (p. 165)		3
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>92</b>

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

## Electives

Any CDT (p. 264), EET (p. 274), MFG (p. 302), RET (p. 326), SM (p. 274), or WLD (p. 332) course not already in the program.

### Recommended Electives:

Code	Title	Credits
CDT-103	Computer-Aided Drafting I	3
CS-140	Introduction to Operating Systems	4
EET-225	Mechatronics I	2
EET-235	Mechatronics II	2
MFG-219	Robotics	3

## Careers

Career opportunities include:

- fabrication technician
- equipment technician
- product test technician

## Music Performance & Technology, AAS

**Program Code: AAS.MUSICPERFTECH**

The Music Performance & Technology AAS (MPT) degree provides skills in three broad categories necessary to successfully make a living as a professional musician and closely-related fields:

1. musicianship and performance skills;
2. technical skills appropriate to composition, recording, digital audio and studio production;
3. business skills necessary for an entrepreneurial career that generates income from multiple sources at any time, and different combinations of sources over time.

The MPT AAS overlaps both with more narrowly targeted programs such as CCC's one-year [Music Technology certificate](#) (p. 207), and also with

transfer-oriented programs such as CCC's [AS Music](#) (p. 124) degree for transfer to music at Portland State University.

For information, contact Kathleen Hollingsworth, 503-594-6299 or [kathleen.hollingsworth@clackamas.edu](mailto:kathleen.hollingsworth@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- recognize and articulate the interrelationships of basic musical properties such as rhythm, melody, harmony, timbre, texture, and form, when listening, performing, evaluating and composing;
- demonstrate performance proficiency on their instrument of choice and at a basic level on the keyboard by using technique adequate for artistic self-expression, performing music in at least one style appropriate for the instrument and its repertory, chart reading/writing, and showing growth in artistry, technical skills, collaborative competence, and knowledge of repertory through regular ensemble experiences;
- use industry-standard recording techniques and equipment, and other types of music technology studios and equipment;
- complete recording projects that include elements of music and audio in digital format, including MIDI, sound sampling, synthesis, processing, editing, and mixing, and use software/hardware appropriate for these tasks in a professional setting;
- create basic business plans, marketing plans and financial statements appropriate for small music businesses (e.g. showing typical musician income streams in these contexts, marketing via social media and other channels).

## Related Instruction Outcomes

### COMPUTATION

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher
- Use appropriate mathematics to solve problems.

### COMMUNICATION

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

### HUMAN RELATIONS

- 1 course - COMM-100Z Introduction to Communication
- Engage in ethical communication processes that accomplish goals.

### PHYSICAL EDUCATION/HEALTH/SAFETY/FIRST AID

- 1 credit - See [Related Instruction](#) (p. ) for course list
- Use effective life skills to improve and maintain mental and physical wellbeing.

## Requirements

First Year		Credits
<b>Fall Term</b>		
MUP-150	Contemporary Music Ensemble	2
Select one of the following: <sup>1</sup>		2
	MUP-171 - MUP-191 Individual Lessons	

MUP-171J - MUP-191J Individual Lessons: Jazz		
MUP-171R - MUP-180R Individual Lessons: Rock, Blues, Pop		
MUS-101	Music Fundamentals	3
MUS-107	Introduction to Audio Recording I	3
MUS-111L	Music Notation Software I	1
MUS-131	Group Piano: Piano for Pleasure	1
MUS-148	Live Sound Engineering	3
<b>Credits</b>		<b>15</b>
<b>Winter Term</b>		
MUP-150	Contemporary Music Ensemble	2
Select one of the following: <sup>1</sup>		2
MUP-171 - MUP-191 Individual Lessons		
MUP-171J - MUP-191J Individual Lessons: Jazz		
MUP-171R - MUP-180R Individual Lessons: Rock, Blues, Pop		
MUS-102	Music Fundamentals	3
MUS-108	Introduction to Audio Recording II	3
MUS-112L	Music Notation Software I	1
MUS-132	Group Piano: Piano for Pleasure	1
MUS-140	Careers in Music	3
MUS-160	Songwriting I	2
<b>Credits</b>		<b>17</b>
<b>Spring Term</b>		
Select one of the following:		4-5
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
	Higher Level Math or Statistics	
MUP-150	Contemporary Music Ensemble	2
Select one of the following: <sup>1</sup>		2
MUP-171 - MUP-191 Individual Lessons		
MUP-171J - MUP-191J Individual Lessons: Jazz		
MUP-171R - MUP-180R Individual Lessons: Rock, Blues, Pop		
MUS-109	Introduction to Audio Recording III	3
MUS-113L	Music Notation Software I	1
MUS-133	Group Piano: Piano for Pleasure	1
MUS-161	Songwriting II	2
PE/Health/Safety/First Aid requirement (p. )		1
<b>Credits</b>		<b>16-17</b>

**Second Year**

<b>Fall Term</b>		
COMM-100Z	Introduction to Communication	4
MUP-150	Contemporary Music Ensemble	2
Select one of the following: <sup>1</sup>		2
MUP-271 - MUP-291 Individual Lessons		
MUP-271J - MUP-291J Individual Lessons: Jazz		
MUP-271R - MUP-280R Individual Lessons: Rock, Blues, Pop		
MUS-111	Music Theory I	3
MUS-141	Introduction to the Music Business	3
MUS-142	Introduction to Electronic Music I: MIDI	3

MUS-218	MPT Seminar I	1
<b>Credits</b>		<b>18</b>
<b>Winter Term</b>		
MUP-150	Contemporary Music Ensemble	2
Select one of the following: <sup>1</sup>		2
MUP-271 - MUP-291 Individual Lessons		
MUP-271J - MUP-291J Individual Lessons: Jazz		
MUP-271R - MUP-280R Individual Lessons: Rock, Blues, Pop		
MUS-112	Music Theory I	3
MUS-143	Introduction to Electronic Music II: Sequencing, Audio Looping, Sound EFX	3
MUS-219	MPT Seminar II	1
WR-101 or WR-121Z	Workplace Writing or Composition I	4
<b>Credits</b>		<b>15</b>
<b>Spring Term</b>		
MUP-150	Contemporary Music Ensemble	2
Select one of the following: <sup>1</sup>		2
MUP-271 - MUP-291 Individual Lessons		
MUP-271J - MUP-291J Individual Lessons: Jazz		
MUP-271R - MUP-280R Individual Lessons: Rock, Blues, Pop		
MUS-113	Music Theory I	3
MUS-144	Introduction to Electronic Music III: Digital Audio	3
MUS-170	Introduction to Scoring Music for Media	2
MUS-220	MPT Seminar III	1
MUS-280	Music/CWE	2
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>96-97</b>

<sup>1</sup> Lessons must be in same instrument discipline, but may be in different styles.

## Careers

Career opportunities include:

- musician
- singer
- vocalist
- performing artist
- arranger, songwriter/lyricist
- touring artist
- private studio teacher
- studio assistant
- promoter/ band manager
- director/conductor
- composer
- independent musician
- accompanist
- chamber musician
- orchestrator

- audio-visual technician
- production assistant (media, audio, sound)
- studio technician

For students interested in owning their own business, the Music department highly recommends as preparation for, or enhancement of, an entrepreneurial career, CCC's SBM-020 Small Business Greenhouse course offered through the Small Business Development Center (SBDC) at the Harmony Community Campus. Students create business, marketing and financial plans for their own business and gain access to SBDC resources for startup businesses, including 1-on-1 financial counseling and other support. Note: SBM-020 Small Business Greenhouse does not qualify for financial aid.

## Nursing (RN), AAS

**Program Code: AAS.NURSING**

The Clackamas Community College nursing program, which is approved by the Oregon State Board of Education and the Oregon State Board of Nursing, is also a partner in the Oregon Consortium for Nursing Education (OCNE).

Admission into the nursing program is by special application only. The application is a two-step process. Students must submit an application via NursingCAS by the stated deadline. Based upon a point system, qualified applicants will progress to the interview/essay portion of the application process. Acceptance to the nursing program allows for co-admission to Clackamas Community College and Oregon Health & Science University School of Nursing.

A criminal background check will be required prior to acceptance into the nursing program. An applicant who has been arrested, charged or convicted of any criminal offense will be evaluated on an individual basis. Certain convictions will automatically exclude an applicant from being accepted into the nursing program. Additional information pertaining to offenses that will deem an applicant as ineligible for the nursing program can be found at: [www.oregon.gov/OSBN/Pages/criminal-history.aspx](http://www.oregon.gov/OSBN/Pages/criminal-history.aspx)

Validation of up-to-date immunization, and urine drug screen are also required prior to the start of clinical rotations in the first term of the program. Maintenance of vaccinations (such as influenza) and American Heart Association Healthcare Provider BLS (CPR) is required throughout all terms of the nursing program. Technical standards related to the ability to perform safe patient care will need to be maintained while in the nursing program.

Disclosure Statement:

Effective February 16th, 2021 the Associate Degree Nursing Program at Clackamas Community College, Harmony Campus in Milwaukie, Oregon is a candidate for initial accreditation by the Accreditation Commission for Education in Nursing (ACEN). This candidacy status expires in Fall 2023.

Accreditation Commission for Education in Nursing  
3390 Peachtree Road NE, Suite 1400 Atlanta, GA 30326  
404-975-5000

## Outcomes Related Instruction Outcomes Computation

- 1 course - MTH-095 Algebra III or higher, except for MTH-098 College Math Foundations
- Use appropriate mathematics to solve problems.

## Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

## Human Relations

- 1 course - PSY-215 Introduction to Developmental Psychology
- Engage in ethical communication processes that accomplish goals.

## Physical Education/Health/Safety/First Aid

- 0-1 credit - courses with **HE** (p. 290), **HPE** (p. 290), or **PE** (p. 322) prefix. Current Basic Life Support (AHA) is required throughout the nursing program and meets PE requirement
- Use effective life skills to improve and maintain mental and physical wellbeing.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- practice personal and professional actions that are based on a set of shared core nursing values;
- locate, evaluate, and ethically utilize information to communicate effectively;
- develop the use of reflection, self-analysis and self-care to deliver culturally appropriate nursing care;
- utilize techniques in motivational interviewing and therapeutic communication to practice relationship-centered nursing care;
- apply scientific and technical modes of inquiry, individually, and collaboratively, to critically evaluate existing or alternative explanations, solve problems, and make evidence-based decisions in an ethical manner;
- recognize which mathematical concepts are applicable to a scenario apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results;
- collaborate as part of a healthcare team, by demonstrating effective leadership in nursing and health care;
- utilize knowledge and analysis to make sound clinical judgments;
- practice reflects utilization and contribution to the broader health-care system;
- engage in intentional, life-long learning;
- apply analytical skills to social phenomena in order to understand human behavior.

## Requirements Nursing Application Requirements

Information regarding the program, the application process and pre-nursing academic advising sessions is available at [www.clackamas.edu/nursing](http://www.clackamas.edu/nursing)

Students are eligible to be considered for admission to the nursing program after completing 30 credits of the Required Preparatory courses listed below. BI-231 Human Anatomy & Physiology I must be completed and math competency must be demonstrated prior to submission of program application.

- Minimum Required Preparatory Course credits to apply: 30
- Required Preparatory Course credits prior to starting NRS course work during the first term of nursing program: 45

Completion of all Required Preparatory courses must be with a letter grade of C or better. Plus and minus grade will not be factored into the GPA calculations. If a course has been taken more than once, the most recent grade received will be the course considered. Application to the nursing program requires a minimum GPA of 3.0 for all completed Required Preparatory courses.

## Nursing (RN) Preparatory Required Courses

Code	Title	Credits
BI-231	Human Anatomy & Physiology I	4
BI-232	Human Anatomy & Physiology II	4
BI-233	Human Anatomy & Physiology III	4
BI-234	Introductory Microbiology	4
FN-225	Nutrition	4
MTH-095	Algebra III	4
PSY-215	Introduction to Developmental Psychology	4
WR-121Z	Composition I	4
WR-122Z	Composition II	4
<b>Arts &amp; Letters, Social Science, or Natural Science electives (p. 169)</b>		<b>13</b>

- The following courses or their equivalents will meet the eight credit minimum writing requirements:
  - WR-121Z Composition I, WR-122Z Composition II and either WR-222 English Composition or WR-227Z Technical Writing when each course is three credits each
  - WR-121Z Composition I and WR-122Z Composition II when each course is four credits
- Completion of WR-121Z Composition I and WR-122Z Composition II as a part of a previous bachelor's degree at a regionally accredited college or university is considered equivalent to completion of the writing series.
- Students may need to take elective credits in order to meet the 45 credit Required Preparatory courses minimum required for entry into the nursing program.
- At least 6 credits must come from Social Sciences
- See list below for approved Required Preparatory courses and elective courses

Note: Courses listed above may have prerequisites. See course descriptions for those requirements.

## Competencies

- MTH-095 Algebra III or higher
  - 4-5 credits MTH-095 Algebra III or higher with a C or better.
  - Note: MTH-098 College Math Foundations does not meet the math competency

- Placement into MTH-105Z Math in Society/MTH-111Z Precalculus I: Functions as determined by CCC placement test dated after 6/15/13. (No credit given)
- Completed MTH-095 Algebra III can be applied toward the 45 credits of Required Preparatory courses as a science course.
- MTH-095 Algebra III credits will not count toward the BS degree.

Applicants should consider completing math through statistics, which will be required for entrance into the OHSU Bachelor's degree program.

### First Year

Summer Term Option		Credits
Select one of the following:		4-5
BI-112	General Biology for Health Sciences <sup>1</sup> Biology with Genetics	
<b>Credits</b>		<b>4-5</b>

### First Term

Select one of the following:		4-5
BI-112	General Biology for Health Sciences <sup>1</sup> Biology with Genetics	
NRS-110	Foundations of Nursing - Health Promotion	5
NRS-110C	Foundations of Nursing - Health Promotion Clinical	4
NRS-230	Clinical Pharmacology I	3
PE-185	Physical Education <sup>2</sup>	1
<b>Credits</b>		<b>17-18</b>

### Second Term

NRS-111	Foundations of Nursing in Chronic Illness I	3
NRS-111C	Foundations of Nursing in Chronic Illness I Clinical	3
NRS-231	Clinical Pharmacology II	3
NRS-232	Pathophysiological Processes I	3
<b>Credits</b>		<b>12</b>

### Third Term

NRS-112	Foundations of Nursing in Acute Care I	2
NRS-112C	Foundations of Nursing in Acute Care I Clinical	4
NRS-233	Pathophysiological Processes II	3
<b>Arts &amp; Letter, Social Science or Natural Science Electives (p. 169)</b>		<b>3</b>
<b>Credits</b>		<b>12</b>

### Fourth Term

NRS-222	Nursing in Acute Care II & End of Life	4
NRS-222C	Nursing in Acute Care II & End of Life Clinical	5
<b>Arts &amp; Letter, Social Science or Natural Science Electives (p. 169)</b>		<b>6</b>
<b>Credits</b>		<b>15</b>

### Fifth Term

NRS-221	Chronic Illness II and End of Life	4
NRS-221C	Chronic Illness II and End of Life Clinical	5
<b>Arts &amp; Letter, Social Science or Natural Science Electives (p. 169)</b>		<b>6</b>
<b>Credits</b>		<b>15</b>



**Sixth Term**

NRS-224	Integrative Practicum	2
NRS-224C	Integrative Practicum Clinical	7
WR-222	English Composition <sup>3</sup>	4
or WR-227Z	or Technical Writing	
<b>Arts &amp; Letter, Social Science or Natural Science Electives</b> (p. 169)		4
<b>Credits</b>		<b>17</b>
<b>Total Credits</b>		<b>92-94</b>

<sup>1</sup> BI-112 meets the Biology with genetics requirement and must be completed prior to start of second year of nursing program.

<sup>2</sup> Current Basic Life Support (AHA) is required throughout the nursing program and meets PE requirement.

<sup>3</sup> Required only if eight credit writing requirement not previously met.

- All courses must be passed with a C or better.
- Core curriculum is sequential and may not be taken out of order. Core nursing curriculum is intended to be completed in two academic years for an AAS degree.

## Nursing (RN) Program Electives

**Note:** All electives must be taken at the 100 level or higher unless otherwise noted.

### Arts & Letters

- Courses must be at least three credits.
- **ASL** (p. 238), **FR** (p. 286), **GER** (p. 289), **SPN** (p. 328) (other world languages are accepted; languages must be 200 level)
- **ART** (p. 247), **DMC** (p. 269), **ENG** (p. 278), **HUM** (p. 298), **J** (p. 299), **MUP** (p. 313), **MUS** (p. 308), **PHL** (p. 321), **R** (p. 325), **TA** (p. 329)
- **COMM** (p. 260) (courses numbered COMM-126 and above)
- **WR** (p. 335) (except WR-101 Workplace Writing, WR-121Z Composition I, WR-122Z Composition II, or WR-227Z Technical Writing)

### Social Science

- Courses must be at least three credits.
- **ANT** (p. 238), **EC** (p. 272), **GEO** (p. 288), **HST** (p. 291), **PS** (p. 323), **PSY** (p. 325), **SOC** (p. 328), **SSC** (p. 327), **WS** (p. 334)

### Natural Science

- Courses must be at least three credits.
- **ASC** (p. 250), **BI** (p. 253)<sup>1</sup> (except BI-160 Bird Identification & Taxonomy, BI-163 Malheur Field Trip, BI-165C Natural History of the Oregon Coast), **CH** (p. 259) (except CH-150 Preparatory Chemistry), **CS** (p. 261),
- **ESR** (p. 281), **G** (p. 289), **GS** (p. 287), **MTH** (p. 303) (MTH-095 Algebra III accepted), **PH** (p. 322), **Z** (p. 337)

## Baccalaureate of Science Degree with a Focus in Nursing

After receiving the AAS degree in Nursing, students who wish to continue on for their baccalaureate degree may do so through co-admission at OHSU. Students who plan to continue through to OHSU must be

aware that to earn their Baccalaureate of Science degree with a focus in Nursing, they must have:

- Two years of the same high school world language, or two terms of college-level world language credit (includes American Sign Language) or a world language proficiency examination.
- STAT-243Z Elementary Statistics I

**Course work for a Baccalaureate of Science Degree with a focus on Nursing through OHSU will include the following Nursing classes:**

- NRS-410: Population-Based Care
- NRS-411: Epidemiology
- NRS-421: Leadership & Outcomes Management in Nursing
- NRS-424<sup>2</sup>: Integrative Practicum I ++
- NRS-425: Integrative Practicum II

At least 15 credits of elective credit must be taken at the upper division level (300/400 level) for the BS program. These can be taken under a co-enrollment agreement with PSU, Oregon Tech, EOU, or SOU.

<sup>1</sup> BI-112 General Biology for Health Sciences meets the Biology with genetics requirement and must be completed prior to start of second year of nursing program.

<sup>2</sup> NRS-224 Integrative Practicum articulates to OHSU for substitution of NRS-424.

## Nursing Assistant Options

Being a certified nursing assistant can be a fulfilling, life-long vocation or the first step in your health care career. Information sessions will be held once a term. The schedule of info sessions can be found on the webpage.

### Nursing Assistant I (CNA 1)

Clackamas Community College Nursing Assistant course provides the student with the skills to perform basic level nursing care. Certified Nursing Assistants are defined by law as people who assist licensed nursing personnel in the provision of nursing care. Content includes: introduction to health care facilities, communication, basic body structure and function, patient needs, preventing infection, body mechanics, and much more. This course is approved by the Oregon State Board of Nursing.

Class times may vary from term to term. Clinical hours begin the sixth week of the course and are normally done at local Skilled Nursing Centers. Approximate length of the course is 11 weeks.

Upon successful completion of this course, students may apply for the Oregon State Board of Nursing certification exam for nursing assistants (CNA 1). The cost of the course will include pre-registration requirements such as criminal background check, American Heart Association CPR for Healthcare Professionals, immunizations and UA drug screen. Course costs also include tuition, textbooks, name badge, state exam fee, and a watch with a second hand, uniform and shoes.

### Reading & Writing Competencies:

You will need to prove competency levels in reading and writing. Competency in reading and writing is measured by CCC placement test(s) or previous college coursework (unofficial transcript). Placement exam scores must be at



least WR-121Z Composition I to be eligible to apply or an unofficial transcript indicating WRD-098 Introductory College Reading & Writing 2 was taken with a C or better.

You must be at least 18 years of age. High school students may apply with written authorization from their high school counselor. (Proof must be provided.)

Before you will be permitted to enroll you must attend the Nursing Assistant Mandatory Orientation. Specific details can be found in the college's Schedule of Classes and online at <https://www.clackamas.edu/academics/departments-programs/nursing-assistant-1-and-2>.

## Certified Nursing Assistant II (CNA 2)

This course is designed to prepare students to perform routine and acute nursing assistant tasks for clients in the following venues: hospital, long-term and skilled care facilities and the community. Instruction incorporates concepts of safety and preventing complications, communicating client responses to the nurse, and documenting/recording outcomes of client care. By Oregon State Board of Nursing regulations, the course is restricted to those who hold a current, unencumbered Oregon CNA 1 license and have their name listed on the CNA Registry. Also, you must be able to demonstrate proficiency in CNA 1 skills during lab sessions. This course meets the minimum state requirements with 36 hours of lecture, 22 hours of lecture/lab, as well as 30 hours of clinical experience.

Before you will be permitted to enroll you must attend the Nursing Assistant II Mandatory Orientation. Specific details can be found in the course schedule and online. For more information, email: [healthsciences@clackamas.edu](mailto:healthsciences@clackamas.edu).

## Careers

Due to an impending nursing shortage, nursing is one of the fastest growing occupations in the United States. Nurses are in demand and may choose to work in a variety of specialties and settings. Newly graduated nurses will enjoy the benefit of a profession that values life-long learning and offers many opportunities for not only educational, but also career advancement. Career opportunities may include but are not limited to entry-level employment as a registered nurse in the acute care setting, sub-acute setting and the ambulatory care setting. With additional education nurses may choose to work as nurse practitioners, nurse educators, nurse researchers, nurse anesthetists, as well as in other specialized roles.

## Project Management, AAS

**Program Code:** AAS.PROJECTMNGT

Upon completion of the two-year Project Management AAS, students with appropriate work experience are qualified to sit for the national certification examination in project management and to earn the Project Management Professional (PMP) certification.

For more information, contact Frank Corona, 503-594-6498, or [francisco.corona@clackamas.edu](mailto:francisco.corona@clackamas.edu).

## Outcomes Related Instruction Outcomes Computation

- 1 course - MTH-065 Algebra II or BA-104 Business Math
- Use appropriate mathematics to solve problems.

## Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

## Human Relations

- 1 course - BA-285 Human Relations in Business
- Engage in ethical communication processes that accomplish goals.

## Physical Education/Health/Safety/First Aid

- 1 credit - See **Related Instruction** (p. ) for course list
- Use effective life skills to improve and maintain mental and physical wellbeing.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- identify project management's five process groups along with primary activities associated with each;
- successfully employ common project management tools, such as a work breakdown structure, network diagram, risk assessment, and earned value management;
- list and explain key motivational, influence, and conflict management techniques;
- utilize and understand both Agile and Change Management approaches in managing projects;
- employ commonly utilized software tools for project management;
- analyze scenarios to determine appropriate responses to ethical dilemmas within the context of a defined scenario, plan, execute, control, and close a project;
- develop and maintain budgets to track financial and human resources;
- manage a project from initiation through closing, ensuring that stakeholder requirements have been met;
- demonstrate effective communication skills by selecting the correct medium and correct messenger to deliver compelling, persuasive, and informative communication to leadership, stakeholders, and the project team.

## Requirements

First Year		
Fall Term		Credits
BA-101	Introduction to Business	4
BA-131	Introduction to Business Computing	4
MTH-065 or BA-104	Algebra II or Business Math	3-4
WR-121Z	Composition I	4
<b>Credits</b>		<b>15-16</b>

**Winter Term**

BA-120	Project Management Fundamentals	4
BA-125	Advanced Project Management Tools	5
CS-135S	Microsoft Excel	3
<b>Electives (p. 171)</b>		4

**Credits** 16

**Spring Term**

BA-111 or BA-211	General Accounting I or Financial Accounting	3-4
BA-127	Project Management: Agile & Change Management	4
BA-205	Business Communications With Technology	4
BA-226	Business Law I	4

**Credits** 15-16

**Second Year****Fall Term**

BA-128	Project Management: Leadership Strategies	4
BA-251	Supervisory Management	3
COMM-111Z	Public Speaking	4
<b>Electives (p. 171)</b>		3

**Credits** 14

**Winter Term**

BA-223	Principles of Marketing	4
BA-285	Human Relations in Business	4
<b>Electives (p. 171)</b>		5

**Credits** 13

**Spring Term**

BA-264	Project Management Tools	3
BA-268	Applied Project Demonstration	3
WR-227Z	Technical Writing	4
<b>PE/Health/Safety/First Aid requirement (p. )</b>		1
<b>Electives (p. 171)</b>		6

**Credits** 17

**Total Credits** 90-92

## Electives

Any **BA** (p. 255) or **BT** (p. 258) course not included in the program. **CS** (p. 261) courses as approved by the department.

Any of the following courses:

Code	Title	Credits
COMM-112	Persuasive Speaking	4
COMM-218Z	Interpersonal Communication	4
FYE-101	First Year Experience Level I	2
FYE-102	First Year Experience Level II	1
WR-101	Workplace Writing	4

## Careers

Career opportunities include:

- project and program management
- project portfolio management
- project administration
- project manager
- program manager
- project scheduler
- cost estimator
- project portfolio manager
- project administrator
- project leader
- project office manager/director
- procurement planner/analyst
- procurement assistant
- project assistant
- project coordinator

## Renewable Energy Technology, AAS

**Program Code: AAS.RNEWNRGYTECH**

The Renewable Energy Technology (RET) program provides technical training for employment in the field of manufacturing, installation and maintenance of renewable energy systems and products. Graduates will be prepared to integrate, install and make repairs related to equipment and controls. This program takes a broad-based approach to training renewable energy technicians, with emphasis on mechanical and electro-mechanical systems, fluid power, instrumentation and controls as well as systems troubleshooting. RET graduates will be prepared to work in the capacity of a technician with specialized skills in energy system measurement, energy efficiency, system design and electronic controls.

For information contact the Industrial Technology Department at 503-594-3318.

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3 credits - See **Related Instruction** (p. ) for course list
- Engage in ethical communication processes that accomplish goals.

#### Physical Education/Health/Safety/First Aid

- 1 course - MFG-107 Industrial Safety & First Aid
- Use effective life skills to improve and maintain mental and physical well-being.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- communicate effectively through technical drawings to determine product and customer specifications in building systems, energy products and thermal components;
- diagnose and repair electromechanical systems;
- design, install and troubleshoot electrical and fluid power controls related to energy system integration;
- analyze potential energy sources and select appropriate technologies;
- perform a residential energy audit, recommend and implement remediation measures;
- communicate the pros and cons of renewable energy technologies to a diverse user base;
- determine the financial feasibility of a project through the mathematical analysis of thermal and electrical energy problems.

## Requirements

### First Year

First Term		Credits
EET-139	Principles of Troubleshooting I	2
IMT-104	Reading Schematics and Symbols	2
MFG-130	Basic Electricity I	3
MTH-050	Technical Mathematics I	4
RET-200	Renewable Energy Systems	2
Human Relations requirement (p. )		3
<b>Credits</b>		<b>16</b>

### Second Term

IMT-120	Industrial Machinery I	3
MFG-109	Computer Literacy for Technicians	3
MFG-131	Basic Electricity II	3
MFG-221	Materials Science	3
MTH-080	Technical Mathematics II	3
RET-209	Renewable Energy I: Energy Efficiency	3
<b>Credits</b>		<b>18</b>

### Third Term

IMT-220	Industrial Machinery II	3
MFG-107	Industrial Safety & First Aid	3
MFG-132	Basic Electricity III	3
RET-211	Renewable Energy II: System Fundamentals	3
WR-101 or WR-121Z	Workplace Writing or Composition I	4
<b>Credits</b>		<b>16</b>

### Second Year

#### Fourth Term

Select one of the following: 3-4

IMT-230	Introduction to Heating, Ventilation, and Air Conditioning	
MFG-103	Machining for Fabrication & Maintenance	
WLD-150	Welding Processes	
EET-215	Technical Mechanics	3
IMT-108	Rigging and Lifting	2

RET-213	Renewable Energy III: Installation & Maintenance	3
RET-240	Alternative Fuels	4

**Credits 15-16**

### Fifth Term

EET-225	Mechatronics I	2
EET-233	Programmable Logic Controllers I	3
MFG-140	Principles of Fluid Power	3
MFG-209	Programming & Automation for Manufacturing	3
RET-215	Renewable Energy IV: Systems Design	3
CDT Electives (p. 172)		3

**Credits 17**

### Sixth Term

EET-234	Programmable Logic Controllers II	3
EET-235	Mechatronics II	2
HD-209 or RET-280	Job Search Skills or Renewable Energy/CWE	3-4
IMT-223	Instrumentation & Controls	3
RET-217	Renewable Energy Capstone Project	3
RET-220	SCADA Fundamentals	3

**Credits 17-18**

**Total Credits 99-101**

## Electives

Any CDT (p. 264) course not included in the program.

## Careers

Career opportunities include:

- residential/commercial energy systems integrator
- energy audit and efficiency technician
- energy systems installer
- photo-voltaic (PV) manufacturing and industrial maintenance technician
- wind turbine technician
- limited renewable technician
- PV, geothermal and solar thermal technicians

## Water & Environmental Technology, AAS

**Program Code: AAS.WATERENVIRONTECH**

The Water & Environmental Technology program provides career technical classes combined with field experience. Classes are offered in day/evening combinations and have enrollment limits to enhance instructional quality and job placement.

Course work emphasizes fundamental aspects of drinking water distribution, drinking water treatment, wastewater collection and wastewater treatment. Course work includes 240 hours of industry cooperative work experience, laboratory methods in environmental chemistry, aquatic microbiology and preparation for the provisional operator in training certification exams.

For information contact Matthew LaForce 503-594-3148 or [laforce@clackamas.edu](mailto:laforce@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-082A Wastewater Math I, MTH-082B Waterworks Math I, MTH-082C Wastewater Math II, MTH-082D Waterworks Math II, or MTH-082E Math for High Purity Water
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - Recommended: PSY-101 Human Relations
- Engage in ethical communication processes that accomplish goals.

#### Physical Education/Health/Safety/First Aid

- 1 course - HE-252 First Aid/CPR/AED
- Use effective life skills to improve and maintain mental and physical wellbeing

## Program Outcomes

Upon successful completion of this program, students should be able to:

- successfully pass the state required level-1 certificate/licensure exams for Oregon water treatment and water distribution (note: these exams can only be taken after completion of the WET AAS degree);
- pass the Oregon Operator in Training certificate wastewater treatment and collection systems examinations;
- maintain and operate water and waste water treatment facilities and collection and water distribution systems;
- utilize mathematical skills to solve certification exam problems as well as situations experienced at water and waste water facilities;
- conduct and document scientific laboratory experiments as applied to the water and waste water industry and effectively communicate determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication;
- communicate the importance of safety in operator daily activities and be good stewards of ethical and professionally work place interactions;
- be more marketable through a second career related work experience;
- attain higher grade certification which will lead to higher wages;
- be certified and licensed as a State of Oregon approved Backflow Assembly Tester;
- develop a thorough understanding of the principles of hydraulics as applied to the water and wastewater industry;
- obtain increased knowledge of bacterial processes used in water and wastewater systems;

- obtain hands-on experience with instrumentation and control systems used in water and wastewater plant operations.

## Requirements

First Year		
Fall Term		Credits
MTH-082A	Wastewater Math I	1
MTH-082B	Waterworks Math I	1
WET-110	Wastewater Operations I	3
WET-111	Waterworks Operations I	3
WET-112	Computer Applications for Water and Wastewater Operations	4
WR-101 or WR-121Z	Workplace Writing or Composition I	4
Human Relations requirement (p. )		3
PSY-101	Human Relations (Recommended)	
<b>Credits</b>		<b>19</b>
Winter Term		
BI-204	Elementary Microbiology	4
MTH-082C	Wastewater Math II	1
MTH-082D	Waterworks Math II	1
WET-120	Wastewater Operations II	3
WET-121	Waterworks Operations II	3
WET-122	Water Distribution and Wastewater Collection Systems	3
WET-123	Environmental Chemistry I	3
<b>Credits</b>		<b>18</b>
Spring Term		
WET-109	Backflow Assembly Operation and Testing	4
WET-130	Wastewater Operations III	4
WET-131	Water Treatment	4
WET-132	Collection & Distribution Lab	1
WET-134	Environmental Chemistry II	3
WET-180	Water & Environmental Projects I	5
<b>Credits</b>		<b>21</b>
Second Year		
Fall Term		
GIS-201	Introduction to Geographic Information Systems	3
WET-125	High Purity Water Production I	3
WET-241	Aquatic Microbiology	4
WET-242	Hydraulics for Water & Wastewater	3
WET-245	Instrumentation & Control	4
WET-280	Water & Environmental Projects II	5
<b>Credits</b>		<b>22</b>
Winter Term		
HE-252	First Aid/CPR/AED <sup>1</sup>	3
MTH-082E	Math for High Purity Water	1
WET-108	Cross-Connection Control Program Specialist	3

WET-135	High Purity Water Production II	4
<b>Credits</b>		<b>11</b>
<b>Total Credits</b>		<b>91</b>

<sup>1</sup> May be waived with current CPR card

## Professional Upgrade Courses

The following courses are designed to upgrade professional skills and in some cases assist in preparation for state certification examinations.

Code	Title	Credits
WET-010	Wastewater Operations I	3
WET-011	Waterworks Operations I	3
WET-020	Wastewater Operations II	3
WET-021	Waterworks Operations II	3
WET-030	Wastewater Operations III	3
WET-031	Water Treatment	3
XWET-C001	1-Day Cross Connection Specialist Update	0.6 CEUs
XWET-C002	1-Day Tester Renewal	0.6 CEUs
XWET-C003	2-Day Tester Retrain/Renewal	1.2 CEUs
XWET-C004	4-Day Cross Connection Specialist Course	3.2 CEUs
XWET-C005	5-Day Backflow Tester Course	4.0 CEUs
XWET-C007	Water Environment School	2.3 CEUs
XWET-C008	Waterworks School	2.0 CEUs

## Careers

Career opportunities include:

- water and/or liquid waste treatment plant and system operator
- environmental science technician
- environmental engineering technician
- environmental lab technician
- source control technician
- surface water specialist
- environmental regulator

## Welding Technology, AAS

**Program Code:** AAS.WELDINGTECH

This program prepares students for entry into these industries: fabricated structural metal products, motor vehicles and equipment, construction and heavy construction, transportation equipment, ship and boat building and repair, aircraft and parts, self-employment and miscellaneous fabricated metal products.

CCC's welding instructors are American Welding Society (AWS) certified professionals. The program's curriculum is based on the AWS national standard for entry level welders.

Course work focuses on the knowledge and skills to perform:

- Fillet welds and groove welds using:
  - Shielded metal arc welding (SMAW)
  - Gas-metal arc welding (GMAW)
  - Flux-core arc welding (FCAW)
  - Gas-tungsten arc welding (GTAW)
  - Steel, stainless steel and aluminum
  - A variety of different electrodes;
- Plasma arc cutting (PAC), air carbon arc cutting (CAC-A) and gouging, manual and automatic oxy-fuel cutting (OFC and OFC-Track Burner) processes;
- Knowledge of materials science and welding theory;
- Print reading, inspection, quality, safety and shop practices;
- Fabrication techniques, including job cost calculations, layout, sketching, bills of material, fitting and cutting welding applied to real projects designed by industry partners.

## Short-Term Training

For students who need a quick-entry strategy into the workforce, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information.

## Oregon Tech Transfer Courses

The Automotive and Welding Department, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelor of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Dustin Bates, 503-594-3973, [dustinb@clackamas.edu](mailto:dustinb@clackamas.edu), or the Automotive and Welding Department, 503-594-3047

## Outcomes

### PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- work safely in an industrial environment around machinery, power tools, and chemicals, including being able to set-up, operate, and make adjustments to various types of welding and cutting equipment;
- complete welding projects such as fillet welds and groove welds in all positions that will meet visual inspection criteria based on American Welding Society (AWS) codes; [Processes include Gas Metal Arc Welding (GMAW), Shielded Metal Arc Welding (SMAW), Flux Core Arc Welding (FCAW), and Gas Tungsten Arc Welding (GTAW)]
- apply basic knowledge of blueprint reading to fabricate projects as assigned;
- recognize and be able to repair common welding defects according to AWS and industry standards.

## Related Instruction Outcomes

### Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems.

## Communication

- 1 course - WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

## Human Relations

- 3-4 credits - Recommended: COMM-100Z Introduction to Communication
- Engage in ethical communication processes that accomplish goals.

## Physical Education/Health/Safety/First Aid

- 1-3 credits - See [Related Instruction \(p. \)](#) for course list
- Use effective life skills to improve and maintain mental and physical wellbeing.

## Requirements

### First Year

First Term		Credits
MTH-050	Technical Mathematics I <sup>1</sup>	4
WLD-100	Welder's Print Reading I	3
WLD-111	Shielded Metal Arc Welding (Stick)	8
or WLD-111A	or Shielded Metal Arc Welding (Stick)	
<b>and</b> WLD-111B	<b>and</b> Shielded Metal Arc Welding (Stick)	
<b>Credits</b>		<b>15</b>

### Second Term

MFG-103	Machining for Fabrication & Maintenance	3
WLD-113	Gas Metal Arc Welding/Flux Core Arc	8
or WLD-113A	Welding (Wirefeed)	
<b>and</b> WLD-113B	or Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed) <b>and</b> Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)	
WR-101	Workplace Writing <sup>1</sup>	4
<b>Credits</b>		<b>15</b>

### Third Term

WLD-110	Welder Certification	4
WLD-115	Gas Tungsten Arc Welding (GTAW)	8
or WLD-115A	or Gas Tungsten Arc Welding (GTAW)	
<b>and</b> WLD-115B	<b>and</b> Gas Tungsten Arc Welding (GTAW)	
<b>Human Relations requirement (p. )</b>		3-4
COMM-100Z	Introduction to Communication (Recommended)	
<b>Credits</b>		<b>15-16</b>

### Second Year

#### Fourth Term

MFG-221	Materials Science	3
WLD-211	Advanced Shielded Metal Arc Welding	4
WLD-250	Welding Fabrication I Beginning Project	4
<b>Electives (p. 175)</b>		4
<b>Credits</b>		<b>15</b>

#### Fifth Term

WLD-200	Welder's Print Reading II	3
WLD-210	Pipe Welding	4
WLD-213	Advanced Gas Metal Arc Welding/Flux Core Arc Welding	4

WLD-251	Welding Fabrication II Intermediate Project	4
<b>Credits</b>		<b>15</b>
<b>Sixth Term</b>		
IMT-108	Rigging and Lifting	2
WLD-215	Advanced Gas Tungsten Arc Welding	4
WLD-252	Welding Fabrication III Advanced Project	4
<b>PE/Health/Safety/First Aid requirement (p. )</b>		1-3
<b>Electives (p. 175)</b>		4
<b>Credits</b>		<b>15-17</b>
<b>Total Credits</b>		<b>90-93</b>

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty or academic advisor for the transfer requirements of the specific advanced program or school.

## Electives

Code	Title	Credits
WLD-102	Introduction to Welding	2
WLD-103	Blacksmithing & Traditional Iron Working	2
WLD-104	Introduction to CNC Plasma Cutting	2
WLD-110	Welder Certification	4
WLD-150	Welding Processes	4
WLD-203	Blacksmithing & Traditional Iron Working II	2
WLD-261	Welding Special Projects	1-2

## Careers

Career opportunities include:

- welding
- fabrication
- construction
- production welding
- sheet metal fabrication

## Daytime Track

This track is based on a full-time credit load. For a part-time option, please see Welding Advisor, Jodi Stapleton, jodis@clackamas.edu, 503-594-3857.

Course	Title	Credits
<b>First Year</b>		
<b>First Term</b>		
MTH-050	Technical Mathematics I	4
WLD-100	Welder's Print Reading I	3
WLD-113	Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)	8
<b>Credits</b>		<b>15</b>
<b>Second Term</b>		
MFG-103	Machining for Fabrication & Maintenance	3
WLD-115	Gas Tungsten Arc Welding (GTAW)	8
WR-101	Workplace Writing	4
<b>Credits</b>		<b>15</b>



Course	Title	Credits
<b>Third Term</b>		
WLD-110	Welder Certification	4
WLD-111	Shielded Metal Arc Welding (Stick)	8
Human Relations requirement (p. )		3-4
COMM-100Z	Introduction to Communication (Recommended)	
<b>Credits</b>		<b>15-16</b>
<b>Second Year</b>		
<b>Fourth Term</b>		
MFG-221	Materials Science	3
WLD-213	Advanced Gas Metal Arc Welding/Flux Core Arc Welding	4
WLD-250	Welding Fabrication I Beginning Project	4
Electives (p. 175)		4
<b>Credits</b>		<b>15</b>
<b>Fifth Term</b>		
WLD-200	Welder's Print Reading II	3
WLD-210	Pipe Welding	4
WLD-215	Advanced Gas Tungsten Arc Welding	4
WLD-251	Welding Fabrication II Intermediate Project	4
<b>Credits</b>		<b>15</b>
<b>Sixth Term</b>		
IMT-108	Rigging and Lifting	2
WLD-211	Advanced Shielded Metal Arc Welding	4
WLD-252	Welding Fabrication III Advanced Project	4
PE/Health/Safety/First Aid requirement (p. )		1-3
Electives (p. 175)		4
<b>Credits</b>		<b>15-17</b>
<b>Total Credits</b>		<b>90-93</b>

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty or academic advisor for the transfer requirements of the specific advanced program or school.

## Electives

Code	Title	Credits
WLD-102	Introduction to Welding	2
WLD-103	Blacksmithing & Traditional Iron Working	2
WLD-104	Introduction to CNC Plasma Cutting	2
WLD-110	Welder Certification	4
WLD-150	Welding Processes	4
WLD-203	Blacksmithing & Traditional Iron Working II	2
WLD-261	Welding Special Projects	1-2

## Evening Track

This track is based on a full-time credit load. For a part-time option, please see Welding Advisor, Jodi Stapleton, jodis@clackamas.edu, 503-594-3857.

Course	Title	Credits
<b>First Year</b>		
<b>First Term</b>		
MTH-050	Technical Mathematics I	4
WLD-100	Welder's Print Reading I	3
WLD-111	Shielded Metal Arc Welding (Stick)	8
<b>Credits</b>		<b>15</b>
<b>Second Term</b>		
MFG-103	Machining for Fabrication & Maintenance	3
WLD-113	Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)	8
WR-101	Workplace Writing	4
<b>Credits</b>		<b>15</b>
<b>Third Term</b>		
WLD-110	Welder Certification	4
WLD-115	Gas Tungsten Arc Welding (GTAW)	8
Human Relations requirement (p. )		3-4
<b>Credits</b>		<b>15-16</b>
<b>Second Year</b>		
<b>Fourth Term</b>		
MFG-221	Materials Science	3
WLD-211	Advanced Shielded Metal Arc Welding	4
WLD-250	Welding Fabrication I Beginning Project	4
Electives (p. 175)		4
<b>Credits</b>		<b>15</b>
<b>Fifth Term</b>		
WLD-200	Welder's Print Reading II	3
WLD-210	Pipe Welding	4
WLD-213	Advanced Gas Metal Arc Welding/Flux Core Arc Welding	4
WLD-251	Welding Fabrication II Intermediate Project	4
<b>Credits</b>		<b>15</b>
<b>Sixth Term</b>		
IMT-108	Rigging and Lifting	2
WLD-215	Advanced Gas Tungsten Arc Welding	4
WLD-252	Welding Fabrication III Advanced Project	4
PE/Health/Safety/First Aid requirement (p. )		1-3
Electives (p. 175)		4
<b>Credits</b>		<b>15-17</b>
<b>Total Credits</b>		<b>90-93</b>

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty or academic advisor for the transfer requirements of the specific advanced program or school.

## Electives

Code	Title	Credits
WLD-102	Introduction to Welding	2
WLD-103	Blacksmithing & Traditional Iron Working	2
WLD-104	Introduction to CNC Plasma Cutting	2
WLD-110	Welder Certification	4

Code	Title	Credits
WLD-150	Welding Processes	4
WLD-203	Blacksmithing & Traditional Iron Working II	2
WLD-261	Welding Special Projects	1-2

## Wildland Fire Management, AAS

**Program Code:** AAS.WLDLNDMGMT

This program provides education and training that can lead to seasonal employment in wildland firefighting or to the first step to a career in fire management, the forest industry or park service. There are many career tracks in the field of wildland firefighting and forestry. It's exciting work that requires fundamental survival, safety and firefighting training and skills. It is also important to be physically fit, work well in a team environment, and respond quickly and efficiently to emergencies.

Clackamas Community College is a certified training site recognized by the Pacific Northwest Wildfire Coordinating Group (PNWCG), the Oregon Department of Forestry, and federal fire management agencies. Program instructors are National Wildfire Coordinating Group (NWCG) certified and offer 15#30 years of wildland firefighting experience. Many of the courses carry NWCG certification as well as college credit.

For information contact Dan LoFaro, 503#594#3683  
or [daniel.lofaro@clackamas.edu](mailto:daniel.lofaro@clackamas.edu)

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3#4 credits - See [Related Instruction](#) (p. ) for course list
- Engage in ethical communication processes that accomplish goals.

#### Physical Education/Health/Safety/First Aid

- 1 course - FRP-246 Wilderness IV: Backcountry CPR/First Aid/AED
- Use effective life skills to improve and maintain mental and physical wellbeing.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- evaluate hazards in the wilderness, forest and fire environments;
- design a plan appropriate to the fire or incident situation;
- execute the plan based on the appropriate strategy, tactics and incident objectives;
- effectively communicate with pertinent individuals to accomplish the mission and/or incident objectives;
- successfully lead, supervise and direct incident personnel at the appropriate level of organization.

## Requirements

### First Year

Fall Term		Credits
FRP-101	Basic Forest Management	3
FRP-102	Basic Forest Management Lab	1
FRP-130	Introduction to Wildland Firefighting (S-130/S-190/ICS-100/IS-700/L-180)	2
FRP-243	Wilderness I: Psychology of Survival	3
GIS-101	Principles of Geospatial Technology	2
WR-101 or WR-121Z	Workplace Writing or Composition I	4
<b>Electives (p. 178)</b>		1

**Credits 16**

### Winter Term

FRP-211	Portable Pumps and Water Use (S-211)	2
FRP-244	Wilderness II: Basic Land Navigation (S-244)	3
FRP-245	Wilderness III: Weather of the Northwest	2
FRP-246	Wilderness IV: Backcountry CPR/First Aid/AED	2
MTH-050 or MTH-065	Technical Mathematics I or Algebra II	4
<b>Electives (p. 178)</b>		2-3

**Credits 15-16**

### Spring Term

BI-103	General Biology; Plants & The Ecosystem	4
FRP-110	Basic Wildland Fire Investigation (FI-110)	1
FRP-131	Advanced Firefighter Training (S-131/S-133)	1
FRP-205	Forest Management Assessments and Inventories	3
FRP-249	Followership to Leadership (L-280)	2
FRP-250	Wilderness VI: Basic Tool Use and Care	1
FRP-270	Basic Air Operations (S-270)	1
<b>Human Relations requirement (p. )</b>		3-4

**Credits 16-17**

### Second Year

#### Fall Term

FRP-200	Basic Incident Command System (I-100, I-200, IS-700, IS-800)	4
FRP-275	Wildland Fire Management 1	4
GIS-201	Introduction to Geographic Information Systems	3
<b>Electives (p. 178)</b>		4

**Credits 15**

#### Winter Term

FRP-215	Fire Operations in the Urban Interface (S-215)	2
FRP-220	Initial Attack Incident Commander (S-200)	1
FRP-265	Wildland Fire Prevention Education 1 (P-101)	3
FRP-290	Intermediate Wildland Fire Behavior (S-290)	3
<b>GIS Electives (p. 287)</b>		3

Electives (p. 178)		3
<b>Credits</b>		<b>15</b>
<b>Spring Term</b>		
FRP-212	Wildfire Power Saws (S-212)	2
FRP-230	Crew Boss (Single Resource) (S-230)	2
FRP-231	Engine Boss (Single Resource) (S-231)	1
GIS Electives (p. 287)		2-3
Electives (p. 178)		7
<b>Credits</b>		<b>14-15</b>
<b>Total Credits</b>		<b>91-94</b>

## Electives

Any EMT (p. 277), FRP (p. 282), GEO (p. 288), or GIS (p. 287) course not included in the program.

## Careers

Career opportunities include:

- Wildland fire fighter
- Hot Shots
- firefighting managers or supervisors
- prevention workers
- forest fire inspectors
- forest worker

# CERTIFICATES OF COMPLETION (CC)

Certificates of Completion are career technical in nature and are designed to prepare students for entry into the workforce. Occupational licensure, career advancement and further study at a four-year college or university are additional possible opportunities for students earning Certificates of Completion at CCC. Certificates of Completion can be a one year program or a less-than-one year program.

## Requirements

- Establish a cumulative 2.0 GPA at CCC
- Establish residency by earning a minimum of 25% of the credits at CCC
- For a Certificate of Completion that is at least one academic year, complete one course from the Communication, Computation, and Human Relations [Related Instruction](#) (p. ) areas
- See [Degree and Certificate Information & Requirements](#) (p. 38) for additional general requirements for all degrees and certificates
- Specific discipline requirements are listed on each program page

## Accounting Clerk, Certificate

**Program Code:** CC.ACNTGCLERK

Curriculum includes basic bookkeeping and accounting, including manual and computerized data entry, transaction analysis, preparation of financial statements and other related tasks.

For information contact Dr. Joan San-Claire, [joan.san-claire@clackamas.edu](mailto:joan.san-claire@clackamas.edu)

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or higher
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 1 course - BA-285 Human Relations in Business
- Engage in ethical communication processes that accomplish goals

## Program Outcomes

Upon successful completion of this program, students should be able to:

- organize, analyze, record, and report financial events by applying the principles, standards, and practices of general, financial, and payroll accounting;
- capably use basic business and accounting computerized tools and systems;

- comprehend overall business environments and influences on financial situations, such as economic events.

## Requirements

Fall Term		Credits
BA-101	Introduction to Business	4
BA-111	General Accounting I	3
BA-131	Introduction to Business Computing	4
MTH-050	Technical Mathematics I <sup>1</sup>	4
<b>Credits</b>		<b>15</b>
Winter Term		Credits
BA-112	General Accounting II	4
BA-177	Payroll Accounting	3
CS-135S	Microsoft Excel	3
WR-121Z	Composition I	4
<b>Electives</b> (p. 179)		1-4
<b>Credits</b>		<b>15-18</b>
Spring Term		Credits
BA-211	Financial Accounting	4
BA-228	Computerized Accounting	3
BA-285	Human Relations in Business	4
EC-201	Principles of Economics: Micro	4
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>45-48</b>

<sup>1</sup> or higher, based on advising placement. Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty or academic advisor for the transfer requirements of the specific advanced program or school.

Courses in this program can be applied to satisfy elective requirements in the [Business AAS](#) (p. 134)

## Electives

Any [BA](#) (p. 255) or [BT](#) (p. 179) course not included in the program or FYE-101 First Year Experience Level I or LIB-101 Introduction to Library Research

## Careers

Career opportunities include:

- accounts payable or receivable clerk
- payroll clerk
- bookkeeper for small and medium-sized service businesses

## Administrative Assistant, Certificate

**Program Code:** CC.ADMINASST

This program provides a strong foundation of basic skills in office administration. Emphasis is placed on critical thinking and human relations skills. Course work includes Related Instruction requirements, industry-standard computer programs and specific business and office administration courses.

For information contact Beverly Forney, 503-594-3115 or [beverlyf@clackamas.edu](mailto:beverlyf@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - BA-104 Business Math
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 1 course - BA-285 Human Relations in Business
- Engage in ethical communication processes that accomplish goals

### Program Outcomes

Upon successful completion of this program, students should be able to:

- analyze and apply basic computer literacy skills, including typing by touch and numerical data entry keyboarding skills;
- effectively utilize business standard software applications (word processing, spreadsheets, database creation/organization, presentations, email/calendars, creation of forms and pdf documents, and office organizational tools);
- identify and analyze the skills necessary for effective office and business operations;
- effectively apply basic business math skills within the full cycle bookkeeping process utilized within office and business operations;
- articulate, analyze, and apply basic English grammar within common business documents (letters, reports, memos) as well as in verbal communication and presentations common to business offices and organizations.

### Requirements

Fall Term		Credits
BA-104	Business Math	3
BA-131	Introduction to Business Computing	4
BT-120	Personal Keyboarding	2
BT-121	Data Entry	1
WR-121Z	Composition I <sup>1</sup>	4
<b>Credits</b>		<b>14</b>
Winter Term		Credits
BA-111 or BA-211	General Accounting I or Financial Accounting	3-4
BT-122	Keyboarding Skillbuilding	2
BT-124	Business Editing I	3
BT-160	Word I	3
BT-216	Office Procedures	4
<b>Credits</b>		<b>15-16</b>
Spring Term		Credits
BA-270	Social Media Marketing	4

BA-285	Human Relations in Business	4
BT-125	Business Editing II	3
BT-161	Word II	3
BT-174	Microsoft Digital Tools for the Professional	2
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>45-46</b>

<sup>1</sup> This course will be removed from the first term IF the student is required to enroll in FYE-101 First Year Experience Level I. WR-121Z Composition I will be rescheduled in a term conducive to a student's preference.

### Careers

Career opportunities include:

- administrative assistant
- legal secretary
- medical secretary

## Administrative Assistant Training, Certificate

**Program Code: CC.ADMINTRNG**

This is a targeted job training program designed for those seeking new career opportunities in administrative office support positions. This program covers the majority of the required curriculum for the **Administrative Assistant Certificate (p. 179)**.

For information contact Beverly Forney, 503-594-3115 or [beverlyf@clackamas.edu](mailto:beverlyf@clackamas.edu)

### Outcomes

#### Program Outcomes

Upon successful completion of this program, students should be able to:

- analyze and apply basic computer literacy skills, including typing by touch;
- effectively utilize business standard software applications (word processing, spreadsheets, database creation/organization, presentations, and email/calendars);
- identify and analyze the skills necessary for effective office operations;
- effectively apply basic business math skills within the full cycle bookkeeping process utilized within office and business operations;
- articulate, analyze, and apply basic English grammar within common business documents (letters, reports, memos) as well as in verbal communication and presentations common to business offices and organizations.

### Requirements

Fall Term		Credits
BA-104	Business Math	3
BT-120	Personal Keyboarding	2
BT-121	Data Entry	1

BT-160	Word I	3
<b>Credits</b>		<b>9</b>
<b>Winter Term</b>		
BA-111	General Accounting I	3
BT-124	Business Editing I	3
BT-216	Office Procedures	4
<b>Credits</b>		<b>10</b>
<b>Spring Term</b>		
BA-270	Social Media Marketing	4
BT-122	Keyboarding Skillbuilding	2
BT-125	Business Editing II	3
BT-174	Microsoft Digital Tools for the Professional	2
<b>Credits</b>		<b>11</b>
<b>Total Credits</b>		<b>30</b>

## Careers

Career opportunities include:

- administrative assistant
- office manager
- legal or medical office assistants

## Business Management, Certificate

Program Code: CC.BUSMANAGEMENT

This certificate focuses on basic management and leadership skills, including: motivation, decision-making, ethics, workflow analysis, supervision and human relations skills, effective communication, essential technology skills, basic budgeting and accounting, and managing change. All courses required for this certificate can be used to satisfy requirements for the [Business AAS](#) (p. 134).

For information call Sharon Parker, 503-594-3075 or [sharonp@clackamas.edu](mailto:sharonp@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - BA-104 Business Math
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 1 course - BA-285 Human Relations in Business
- Engage in ethical communication processes that accomplish goals

## Program Outcomes

Upon successful completion of this program, students should be able to:

- make informed business decisions based on the use analysis of financial and budgetary data;

- demonstrate an understanding of the functions of leading, planning, organizing, and controlling in an organization;
- identify effective supervisory strategies (e.g. motivation, goal setting, coaching, leadership, etc.) for given individual and group situations;
- demonstrate the ability to communicate effectively;
- identify the various laws that impact employee management practices;
- identify effective supervisory strategies (e.g. motivation, goal setting, coaching, leadership, etc.) for given individual and group situations.

## Requirements

Fall Term		Credits
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-131	Introduction to Business Computing	4
WR-121Z	Composition I	4
<b>Credits</b>		<b>15</b>
<b>Winter Term</b>		
BA-119	Project Management Practices	2
BA-211	Financial Accounting	4
BA-226	Business Law I	4
BA-251	Supervisory Management	3
BA-285	Human Relations in Business	4
<b>Credits</b>		<b>17</b>
<b>Spring Term</b>		
BA-206	Management Fundamentals	4
BA-217	Budgeting for Managers	3
BA-223	Principles of Marketing	4
BA-224	Human Resource Management	4
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>47</b>

All courses in this program can be applied to partially satisfy requirements in the [Business AAS](#) (p. 134).

## Careers

Career opportunities include:

- management trainee
- first-line supervisory
- management analyst
- merchandiser
- marketing/sales representative in small and medium-sized retail and service companies

## Career & Technical Education (CTE) Licensure Prep, Certificate

Program Code: CC.CTEPREP

This program meets the Teacher Standards and Practices Commission (TSPC) professional development requirements for industry experts seeking an Oregon Restricted or Preliminary CTE license to teach in secondary CTE (middle and high school) programs. It also provides professional development for post-secondary CTE (community college) faculty and instructors teaching in registered apprenticeships to improve



teaching skills and understanding of the learning process. This certificate provides individuals with educational foundations in classroom and program management and develops skills needed to meet the needs of diverse students and to integrate developmentally appropriate and culturally competent instructional strategies.

For information contact Laurette Scott, 503-594-3840 or [laurette@clackamas.edu](mailto:laurette@clackamas.edu)

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- perform in accordance with the legal rights and responsibilities of teachers and students in educational settings;
- create, deliver, and adapt instruction to meet the needs of diverse learners;
- effectively manage classrooms and learning environments;
- compare, contrast, and effectively apply appropriate instructional strategies and assessments;
- apply learning theory to teach in culturally responsive and developmentally appropriate ways;
- analyze elements of quality CTE programs and current issues impacting Career and Technical Education.

## Requirements

Fall Term		Credits
ED-113 or ED-114	Instructional Strategies for Literacy or Instructional Strategies for Math	3
ED-130	Comprehensive Classroom Management	3
ED-220	Introduction to CTE in Oregon	3
<b>Credits</b>		<b>9</b>
Winter Term		
ED-131	Instructional Strategies	3
ED-216	Foundations of Teaching & Education	4
ED-229	Learning & Development	3
<b>Credits</b>		<b>10</b>
Spring Term		
ED-258	Culturally Responsive Teaching & Education	3
ED-280	Practicum/CWE	6
<b>Credits</b>		<b>9</b>
<b>Total Credits</b>		<b>28</b>

- Proof of College (100) level English/Language Arts and Math credits is required for licensure
- Completion of both ED-169 Overview of Students With Special Needs and ED-254 Instructional Strategies for Dual Language Learners highly recommended for licensure
- All courses must be passed with a C or better

## Careers

This program is designed to provide current and prospective CTE teachers at the secondary and post-secondary levels with foundational skills to be successful educators in their area of professional expertise. Careers related to this certificate program include licensed teachers in

middle and high school CTE programs and instructors in community college CTE programs and registered apprenticeship programs.

## Computer & Network Administration, Certificate

**Program Code: CC.COMPNETADMIN**

The Computer & Network Administration program prepares students for technical support careers specializing in network administration and maintenance. Students may earn either a one-year Certificate of Completion or two-year **Computer & Network Administration AAS (p. 135)**. The course work emphasizes development of analytical and problem-solving skills in addition to specific hardware and software configurations. Cooperative Work Experience (CWE) is supervised real-world employment that supplements the academic classroom environment.

For students interested in pursuing a bachelor's degree, the **Computer & Network Administration AAS (p. 135)** articulates to a Bachelor of Applied Science in Technology and Management at Oregon Tech.

## Oregon Tech Transfer Courses

The Computer Science program, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelors of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Rick Carino, 503-594-3167, or [rcarino@clackamas.edu](mailto:rcarino@clackamas.edu)

## Outcomes

### Related Instruction Outcomes

#### Computation

- 3 credits - See **Related Instruction (p. )** for course list
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-227Z Technical Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3-4 credits - See **Related Instruction (p. )** for course list
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- explain basic troubleshooting processes and procedures from initial diagnosis to final documentation and reporting;
- explain and demonstrate how to interact and communicate effectively with people of different technical backgrounds and professional positions;
- operate, install, manage, and troubleshoot major desktop operating systems;

- identify, install, and troubleshoot computer and network hardware components;\n
- understand fundamental network technologies and implement a basic local area network;
- exhibit good teamwork skills and serve as effective members of project teams.

## Requirements

Fall Term		Credits
CS-140	Introduction to Operating Systems	4
CS-227	Computer Hardware & Repair	4
WR-101 or WR-227Z	Workplace Writing or Technical Writing	4
<b>Credits</b>		<b>12</b>
Winter Term		Credits
CS-151	Networking 1	4
CS-228	Computer OS Maintenance & Repair	4
CS-240W	Windows Desktop Administration	3
<b>Electives (p. 183)</b>		<b>3-5</b>
<b>Credits</b>		<b>14-16</b>
Spring Term		Credits
CS-152	Networking 2	4
CS-225	Computer End User Support	3
CS-240L	Linux Administration I	4
CS-279W	Windows Server Administration	4
<b>Credits</b>		<b>15</b>
Summer Term		Credits
CS-125H	HTML & Web Site Design	4
CS-280	Computer Science/CWE	3
<b>Computation requirement (p. )</b>		<b>3</b>
<b>Human Relations requirement (p. )</b>		<b>3-4</b>
<b>Credits</b>		<b>13-14</b>
<b>Total Credits</b>		<b>54-57</b>

## Electives

Code	Title	Credits
BA-101 or BA-103	Introduction to Business Business Strategies for Computer Consultants	3-4
BA-120	Project Management Fundamentals	4
BA-264	Project Management Tools	3
FYE-101	First Year Experience Level I	2
WR-227Z	Technical Writing	4
Any CS course numbered CS-125 or higher not included in the program		3-4

## Careers

Career opportunities include:

- network specialist
- computer service technician
- field engineer
- customer service engineer

- computer technician
- PC/LAN support specialist

## Computer-Aided Drafting (CAD), Certificate

Program Code: CC.CAD

The Computer-Aided Drafting (CAD) certificate supports students to gain the skills needed to enter the workforce as drafters and design technicians in manufacturing, construction, and architectural settings. The program gives students the opportunity to develop skills and explore multiple drafting approaches and technologies. Many of the courses are part of the [Computer-Aided Manufacturing AAS \(p. 136\)](#).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply computer software applications to produce manufacturing, construction, and architectural-related documents to scale;
- create 2D and 3D CAD models;
- model CNC machining processes and generate G&M code;
- demonstrate fundamental competency using AutoCAD Inventor software;
- create solid models, assemblies, and drawings based on design intent;
- create and design construction documents used in Building Information Modeling;
- apply problem-solving skills to document a new product or process.

## Requirements

Fall Term		Credits
CDT-102	Sketching & Problem Solving	3
CDT-223	Inventor Fundamentals	3
MTH-050	Technical Mathematics I <sup>1</sup>	4
<b>Credits</b>		<b>10</b>
Winter Term		Credits
CDT-103	Computer-Aided Drafting I	3
CDT-108A	Introduction to SolidWorks	3
CDT-130	Introduction to Fusion	2
<b>Credits</b>		<b>8</b>
Spring Term		Credits
CDT-225	Advanced SolidWorks	3
CDT-240	Revit for Architecture	3
<b>Credits</b>		<b>6</b>
<b>Total Credits</b>		<b>24</b>

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

## Careers

Career opportunities include:

- CAD technician
- drafter
- architectural drafter
- mechanical drafter

## Computer Application Specialist, Certificate

**Program Code:** CC.COMPAPPSPECIAL

The Computer Application Specialist program prepares students for a variety of technical support careers including help desk, training, and design positions. The course work emphasizes development of analytical and problem-solving skills in addition to specific hardware and software configurations. Cooperative work experience (CWE) is supervised real-world experience that supplements the academic classroom environment.

For information contact Diane Sargent, 503-594-3830 or [dianes@clackamas.edu](mailto:dianes@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 3 credits - See [Related Instruction \(p. \)](#) for course list
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-227Z Technical Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3 credits - See [Related Instruction \(p. \)](#) for course list
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- operate, install, manage, and troubleshoot major desktop operating systems;
- apply sophisticated word processing and spreadsheet development techniques and provide support to businesses using word processing and spreadsheet applications;
- use HTML and CSS, along with current web editing software, to create standards-compliant websites or support a front-end web development team;
- integrate into a help desk or IT support team to provide professional customer service and application training;
- exhibit good teamwork skills and serve as effective members of project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication.

## Requirements

Fall Term		Credits
CS-140	Introduction to Operating Systems	4
CS-227	Computer Hardware & Repair	4
WR-101 or WR-227Z	Workplace Writing or Technical Writing	4
<b>Electives (p. 184)</b>		3-4
<b>Credits</b>		<b>15-16</b>
Winter Term		Credits
CS-135S	Microsoft Excel	3
CS-135W	Microsoft Word	3
CS-151	Networking 1	4
CS-240W	Windows Desktop Administration	3
<b>Credits</b>		<b>13</b>
Spring Term		Credits
BA-103	Business Strategies for Computer Consultants	3
CS-135DB	Microsoft Access	3
CS-225	Computer End User Support	3
CS-240L	Linux Administration I	4
<b>Credits</b>		<b>13</b>
Summer Term		Credits
CS-125H	HTML & Web Site Design	4
CS-280	Computer Science/CWE	3
<b>Computation requirement (p. )</b>		<b>3</b>
<b>Human Relations requirement (p. )</b>		<b>3</b>
<b>Credits</b>		<b>13</b>
<b>Total Credits</b>		<b>54-55</b>

## Electives

Code	Title	Credits
Select one of the following:		
BA-101	Introduction to Business	3-4
BA-103	Business Strategies for Computer Consultants	
BA-120	Project Management Fundamentals	
BA-264	Project Management Tools	3
Any CS course numbered CS-125 or higher not included in the program		3-4

## Careers

Career opportunities include:

- web designer
- database specialist
- software trainer
- software installation and maintenance engineer
- computer applications specialist
- client support representative
- customer service engineer
- help desk technician
- software consultant

# Construction Trades, General Apprenticeship, Certificate

Program Code: CC.CONSTRUCTPB

Trades: Plumber

## 8000 BOLI-ATD Trades

Registered Apprenticeship in the construction trades or occupations is a method of career and technical related training leading to certification and journey-level status.

This is a limited-entry program for registered apprentices who are sponsored by individual employers, accepted by a Joint Apprenticeship and Training Committee (JATC) and registered with the State of Oregon Bureau of Labor & Industries (BOLI).

Clackamas Community College offers three state-wide Apprenticeship degrees and their stackable Certificates of Completion and Career Pathway Certificates of Completion. These parent degrees are: [Electrician Apprenticeship Technologies AAS \(p. 147\)](#), [Construction Trades General Apprenticeship AAS \(p. 137\)](#), and [Industrial Mechanics and Maintenance Technology Apprenticeship AAS \(p. 158\)](#). These degrees do not guarantee licensure.

This program is articulated with Oregon Institute of Technology (OIT), which requires a higher-level math course than is required for the program. Contact an Apprenticeship Advisor at CCC for help with transfer to OIT.

Electricians and plumbers require state licensure. Related training courses meet industry standards and are offered through a partnership between the Oregon State Apprenticeship & Training Council and the local Joint Apprenticeship & Training Committee.

For more information on CCC's apprenticeship programs, visit the [Apprenticeship webpage](#), or contact an Apprenticeship Advisor at 503-594-0959, or [apprenticeship.advising@clackamas.edu](mailto:apprenticeship.advising@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 3-5 credits - See [Related Instruction \(p. \)](#) for course list
- Use appropriate mathematics to solve problems.

#### Communication

- 3-4 credits - See [Related Instruction \(p. \)](#) for course list
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3-4 credits - See [Related Instruction \(p. \)](#) for course list
- Engage in ethical communication processes that accomplish goals.

## PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

### Building Fundamentals/Safety

- demonstrate safe working practices including rigging and lock out tag out in accordance with state and federal regulations;
- apply OSHA practices in relation to the specific trade;
- apply theory as it relates to trade competencies;
- utilize recognized standard building code guidelines as applicable;
- demonstrate ability to perform welding/brazing applications (plumbers);
- analyze the properties of materials and how they apply to welding and brazing applications (plumbers).

### Mathematics/Measurement/Calculations and Equipment

- calculate elementary algebraic equations and formulas;
- apply appropriate formulas to mathematical situations;
- demonstrate the proper care, use, and storage of hand and power tools.

### Blueprint and Schematics

- read and interpret building plans and drawings;
- prepare and utilize isometric sketching and detailed drawings per individual trade (plumbers).

### Code and Journey Level Preparation (Plumbers)

- utilize recognized standard building codes guidelines as applicable;
- complete a code prep exam with a 75% or higher score per individual trade.

## Requirements

Code	Title	Credits
<b>Computation requirement (p. )</b>		3-5
<b>Communication requirement (p. )</b>		3-4
<b>Human Relations requirement (p. )</b>		3-4
APR-109PB	Plumbing Conservation Systems	2
APR-117PB	Plumbing Basic Trade & Code	3
APR-127PB	Plumbing Fittings & Materials	3
APR-137PB	Plumbing Basic Installation & ISO	3
APR-147PB	Plumbing Math	3
APR-157PB	Plumbing Pipe Sizing & Advanced Math	3
APR-167PB	Plumbing Welding and Print Reading	3
APR-177PB	Plumbing Related Science	3
APR-187PB	Plumbing Related Codes	3
APR-197PB	Plumbing Backflow Prevention	1
APR-205PB	Service Plumbing	3
APR-207PB	Municipal Systems	2
APR-217PB	Advanced Plumbing Installation	3
APR-227PB	Plumbing Gas Venting & Drains	3
APR-237PB	Plumbing Water Heater & Circuit Controls	3
APR-247PB	Advanced Plumbing Code I	3
APR-257PB	Advanced Plumbing Code II	3
APR-267PB	Advanced Plumbing Code III	3
<b>Total Credits</b>		<b>59-63</b>

## Careers

- Asbestos Removal
- Carpenter
- HVAC/R
- Interior/Exterior Finisher
- Painter
- Pile Driver
- Plumber<sup>1</sup>
- Scaffold Erector
- Sheet Metal

<sup>1</sup> Programs offered at Clackamas Community College through partnership with local JATC.

## Dental Assistant, Certificate

**Program Code:** CC.DENTALASST

The Dental Assistant (DA) program is designed to prepare students for entry level positions in the dental care setting. The goal of the program is to graduate students that have demonstrated competencies in clinical and administrative practices as well as demonstrated work ethics and professional values consistent with that of the American Dental Association (ADA).

For more information, contact [healthsciences@clackamas.edu](mailto:healthsciences@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - PSY-101 Human Relations
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate proficiency in exposing, processing, and mounting dental radiographs and digital imaging;
- apply current concepts of occupational safety hazards, infection control and aseptic procedures to promote a safe work environment and prevent disease transmission;
- perform entry-level chairside dental assisting skills;
- demonstrate basic competencies in dental administrative practices;
- assist with medical emergencies in the dental office.

## Requirements

### Program Requirements and Prerequisites

This limited entry program requires the applicant to meet the program requirements prior to being formally admitted into the program. Information regarding specific requirements and timelines are located at [www.clackamas.edu/dental-assistant](http://www.clackamas.edu/dental-assistant).

DA students will participate in unpaid, supervised externships in the dental care setting.

Current American Heart Association (AHA) BLS Provider (provider level CPR) and First Aid (AHA Heartsaver) certification are required during practicums. All students will be required to complete a criminal history background, provide proof of immunization, and students will be asked to take a drug test as arranged by the department.

Disclaimer: Clinical training is required in order to complete certain Health Sciences programs offered by Clackamas Community College (CCC). Although CCC does not restrict program entry based on age, some college partners, such as healthcare agencies, organizations, and clinics, require students to be at least 18 years of age before they can participate in clinical training. Students who intend to enroll prior to reaching 18 years of age should consult with the appropriate Health Sciences program director or administrator to determine when clinical training begins for their program and to understand any limitations.

First Term		Credits
DA-101	Dental Radiology I	2
DA-101L	Dental Radiology I Lab	1
DA-104	Clinical Procedures I	2
DA-104L	Clinical Procedures I Lab	1
DA-107	Dental Materials I	2
DA-107L	Dental Materials I Lab	1
DA-110	Clinical Practicum I	1
DA-115	Dental Science	2
DA-125	Dental Infection Control	2
WR-101 or WR-121Z	Workplace Writing or Composition I	4
<b>Credits</b>		<b>18</b>

Second Term		Credits
DA-102	Dental Radiology II	2
DA-102L	Dental Radiology II Lab	1
DA-105	Clinical Procedures II	2
DA-105L	Clinical Procedures II Lab	1
DA-108	Dental Materials II	2
DA-108L	Dental Materials II Lab	1
DA-120	Clinical Practicum II	5
PSY-101	Human Relations	3
<b>Credits</b>		<b>17</b>

Third Term		Credits
DA-106	Clinical Procedures III	2
DA-106L	Clinical Procedures III Lab	1
DA-130	Clinical Practicum III	8
DA-135	Pharmacology/Medical Emergencies	2
DA-145	Dental Office Procedures	2

MTH-050 or MTH-065	Technical Mathematics I or Algebra II	4
<b>Credits</b>		<b>19</b>
<b>Total Credits</b>		<b>54</b>

Dental lab schedules (am/pm) are based on lottery. Information will be provided at orientation.

All courses must be passed with a C or better.

Core curriculum is sequential and may not be taken out of order. Core curriculum is intended to be completed over three consecutive terms.

## Careers

Career opportunities include:

- managed care facilities
- private dental practice
- state and county clinics
- dental schools
- insurance industry

## Early Childhood Education & Family Studies, Certificate

**Program Code:** CC.ECEFS

This program provides a foundation in the ten core knowledge categories: Family and Community Systems; Diversity; Health, Safety and Nutrition; Human Growth and Development; Learning Environments and Curriculum; Observation and Assessment; Personal, Professional and Leadership Development; Program Management; Special Needs; and Understanding and Guiding Behavior (The Oregon Registry, 2008).

Students must obtain a First-Aid certificate with infant-toddler CPR by the end of the first year.

For information contact Dawn Hendricks, 503-594-6158 or [dawn.hendricks@clackamas.edu](mailto:dawn.hendricks@clackamas.edu)

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or MTH-098 College Math Foundations
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - ED-258 Culturally Responsive Teaching & Education
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- promote children's development and learning by collaborating to create healthy, respectful and supportive environment;
- respect, support and communicate with families;
- observe and document young children;
- define and understand developmentally effective approaches, depending on the children's ages, characteristics and the setting within which teaching and learning occur;
- use content knowledge to understand curriculum by designing and implementing experiences that promote positive development and learning for each and every young child;
- identify and conduct themselves as members of the early childhood community.

## Requirements

<b>Fall Term</b>		<b>Credits</b>
ECE-150	Introduction to Early Childhood Education & Family Studies	4
ECE-235	Safety, Health and Nutrition	3
ED-216	Foundations of Teaching & Education	4
FYE-101	First Year Experience Level I	2
WR-121Z	Composition I	4
<b>Credits</b>		<b>17</b>
<b>Winter Term</b>		
ECE-121	Observation and Guidance I in ECE Settings	4
ECE-154	Language & Literacy Development in Young Children	4
HDF-225	Prenatal, Infant & Toddler Development	3
Select one of the following:		4
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
MTH-098	College Math Foundations	
<b>Credits</b>		<b>15</b>
<b>Spring Term</b>		
ECE-240	Environments and Curriculum Planning	4
ECE-280	Early Childhood Education/CWE	3
ED-258	Culturally Responsive Teaching & Education	3
HDF-247	Preschool Through Adolescent Child Development	3
<b>Credits</b>		<b>13</b>
<b>Total Credits</b>		<b>45</b>

All courses must be passed with a C or better

## Educación infantil y estudios familiares, Certificate

**Program Code:** CC.ECEFSES

Este programa proporciona una introducción a los estándares y competencias de preparación de maestros de la primera infancia de NAEYC:

1. promoción del desarrollo y el aprendizaje infantil,
2. establecimiento de asociaciones familiares y comunitarias,



- observar, documentar y evaluar para apoyar a los niños pequeños y las familias,
- usar enfoques eficaces en el desarrollo para conectarse con los niños y las familias,
- usar el conocimiento del contenido para desarrollar un plan de estudios significativo,
- convertirse en un profesional.

Los graduados del programa podrán trabajar como asistentes de maestros de aprendizaje temprano y proveedores del cuidado familiar.

## Resultados

### OBJETIVOS DE APRENDIZAJE RELACIONADOS

#### COMPUTACIÓN

- 1 curso- MTH-050ES Matemáticas Técnicas I
- Utilizar las cuentas matemáticas adecuadas para resolver los problemas.

#### COMUNICACIÓN

- 1 curso- WR-124ES Escritura de ensayos de nivel universitario en español
- Leer de forma activa, pensar de forma crítica y escribir con capacidad y propósito para un público profesional.

#### RELACIONES HUMANAS

- 1 curso- ECE-258ES Equidad y Diversidad en La Educación Infantil
- Participar de procesos éticos de comunicación que logren objetivos.

## RESULTADOS DEL PROGRAMA

Al completar con éxito este programa, los estudiantes deberían poder:

- explicar el desarrollo y aprendizaje de los niños en contexto;
- promover asociaciones entre las familias y los maestros, y conexiones con la comunidad;
- practicar evaluación, documentación y observación de los niños;
- implementar estrategias de enseñanza apropiadas al desarrollo, a la cultura y a la lingüística;
- integrar el contenido académico en el currículo de la niñez temprana;
- demostrar profesionalismo como educador de la niñez temprana.

## Requisitos

First Year		Credits
Fall Term		
ECE-150ES	Introducción a la educación infantil y los estudios familiares	4
FYE-101ES	Experiencia de Primer Año (first Year Experience en español)	2
HDF-225ES	Desarrollo de las Etapas Prenatal, Infantes y de Niños Pequeños	4
WR-124ES	Escritura de ensayos de nivel universitario en español	4
<b>Credits</b>		<b>14</b>

#### Winter Term

ECE-121ES	Observación y Orientación I en Educación Temprana	4
ECE-235ES	Seguridad, Salud, y Nutrición	3
HDF-247ES	Desarrollo y crecimiento en la niñez: preescolar hasta la adolescencia	4
MTH-050ES	Matemáticas Técnicas I	4
<b>Credits</b>		<b>15</b>

#### Spring Term

ECE-240ES	Ambientes y Planificación Curricular	4
ECE-246ES	Relaciones entre la escuela, la familia y la comunidad	4
ECE-258ES	Equidad y Diversidad en La Educación Infantil	4
ECE-280ES	Experiencia Laboral Cooperativa	4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>45</b>

Los cursos deben aprobarse con una C o mayor

## Carreras

Las oportunidades profesionales incluyen:

- maestro principal en programas de aprendizaje temprano públicos y privados para bebés, niños pequeños y preescolares y maestros auxiliares en clases de kindergarten a 3.er grado
- personal de apoyo familiar (p. ej., defensores de familia, profesionales especializados en crianza, paraprofesionales especializados en vida familiar, etc.) en diversos contextos educativos o agencias de apoyo infantil y familiar

## Electrician Apprenticeship Technologies, Certificate

**Program Code: CC.ELECTRICIANLE**

**Trades: Limited Energy**

**6000-8000 BOLI-ATD Trades**

Registered Apprenticeship in the electrician trades or occupations is a method of career and technical related training leading to certification and journey-level status.

This is a limited-entry program for registered apprentices who are sponsored by individual employers, accepted by a Joint Apprenticeship and Training Committee (JATC) and registered with the State of Oregon Bureau of Labor & Industries (BOLI).

Clackamas Community College offers three state-wide Apprenticeship degrees and their stackable Certificates of Completion and Career Pathway Certificates of Completion. These parent degrees are: [Electrician Apprenticeship Technologies AAS \(p. 147\)](#), [Construction Trades General Apprenticeship AAS \(p. 137\)](#), and [Industrial Mechanics and Maintenance Technology Apprenticeship AAS \(p. 158\)](#). These degrees do not guarantee licensure.

This program is articulated with Oregon Institute of Technology (OIT), which requires a higher-level math course than is required for the

program. Contact an Apprenticeship Advisor at CCC for help with transfer to OIT.

Electricians and plumbers require state licensure. Related training courses meet industry standards and are offered through a partnership between the Oregon State Apprenticeship & Training Council and the local Joint Apprenticeship & Training Committee.

For more information on CCC's apprenticeship programs, visit the [Apprenticeship webpage](#), or contact an Apprenticeship Advisor at 503-594-0959, or [apprenticeship.advising@clackamas.edu](mailto:apprenticeship.advising@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 3-5 credits - See [Related Instruction \(p. \)](#) for course list
- Use appropriate mathematics to solve problems.

#### Communication

- 3-4 credits - See [Related Instruction \(p. \)](#) for course list
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3-4 credits - See [Related Instruction \(p. \)](#) for course list
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

### Electrical Fundamentals/Safety

- solve mathematical formulas and equations of theory;
- describe and apply basic theory of electrical sources;
- demonstrate safe working practices in accordance with state and federal regulations.

### Mathematics/Measurement/Calculations and Equipment

- calculate voltage drop;
- solve electrical equations using trade specific mathematical formulas;
- use test equipment to make electrical measurements;
- use and care of trade specific equipment appropriately.

### Assessment and Troubleshooting

- operate PLC's according to trade specific applications and methodology;
- describe various troubleshooting techniques of trade specific equipment;
- draw and interpret blueprints and schematics.

### Electrical Code and Exam Preparation

- interpret NEC and Oregon Specialty Codes;
- prepare for state exam;
- complete and pass timed practice exams;
- demonstrate knowledge of industry terminology;
- use the NEC articles and tables to perform various calculations;

- utilize the Oregon Administrative Rules (OAEs) in relation to the NEC and Oregon Specialty Codes (OSC);
- complete the NEC code preparation exams with a 75% and higher.

## Requirements

### Limited Energy

Code	Title	Credits
Computation requirement (p. )		3-5
Communication requirement (p. )		3-4
Human Relations requirement (p. )		3-4
APR-111LE	Residential Technologies	4
APR-112LE	Basic Trade, Code & Safety	4
APR-113LE	Specialized Control Systems	4
APR-114LE	Data Communications	4
APR-115LE	Amplified Systems	4
APR-116LE	Security Systems	4
APR-217LE	Integrated Systems	4
APR-218LE	Fire Alarm Systems	4
APR-219LE	ADA & Code	4
<b>Total Credits</b>		<b>45-49</b>

## Careers

6000 Hours BOLI-ATD Trades:

- Limited Energy Technician<sup>1</sup>
- Sign Maker/Fabricator

8000 Hours BOLI-ATD Trades:

- Inside Electrician<sup>1</sup>
- Manufacturing Plant Electrician
- Sign Assembler/Fabricator
- Sign Maker/Erector
- Stationary Engineer

<sup>1</sup> Programs offered at Clackamas Community College through partnership with local JATC or IEC.

## Electronics Engineering Technology, Certificate

**Program Code: CC.ELECTRONENGTECH**

Program course work focuses on a traditional electronics foundation, including a basic electronics series, digital logic series, a troubleshooting series, a physics series and a semiconductor linear circuit series. The degree focuses on electronics and engineering design principles and electronics systems and is taught in a team environment whenever possible.

Specific skill areas for the Electronics Engineering Technology degree include test equipment use, computer use, problem-solving, teamwork, understanding math and electronics fundamentals and writing and oral communication.

## Oregon Tech Transfer Courses

The Industrial Technology Department, in partnership with Oregon Tech, offers a number of transferable classes into Oregon Tech's Electronics Engineering Technology degree program.

For information contact the Industrial Technology Department, 503-594-3318.

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - **MTH-111** College Algebra
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - **WR-121** English Composition
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3 credits - Recommended: **PSY-101** Human Relations
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- communicate critical information about electronic systems using verbal, written, or graphical means;
- troubleshoot electronic systems;
- analyze basic electronic systems;
- install or build electronic and electromechanical systems;
- use proper electrical test equipment to test and maintain electronic and electrical components and equipment;
- demonstrate safe work habits around electricity and electronic equipment.

## Requirements

First Term		Credits
EET-112	Electronic Equipment and Assembly I	1
EET-137	Electrical Fundamentals I	4
EET-139	Principles of Troubleshooting I	2
EET-157	Digital Logic I	3
SM-150	Semiconductor Processing I	2
WR-121Z	Composition I	4
<b>Credits</b>		<b>16</b>
Second Term		Credits
EET-113	Electronic Equipment and Assembly II	1
EET-141	Electrical Fundamentals II	4
EET-257	Digital Logic II	3
IMT-120	Industrial Machinery I	3
MTH-111Z	Precalculus I: Functions	4
<b>Credits</b>		<b>15</b>
Third Term		Credits
EET-114	Electronic Equipment and Assembly III	1

EET-142	Electrical Fundamentals III	4
EET-254	Introduction to Microcontrollers	3
IMT-223	Instrumentation & Controls	3
SM-280	Electronics & Microelectronics/CWE	2
<b>Human Relations requirement (p. )</b>		<b>3</b>
PSY-101	Human Relations (Recommended)	
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>47</b>

## Careers

Career opportunities include:

- engineering technician
- manufacturing equipment technician
- field services technician
- operators and processors with large and small employers in high-tech industries

## Emergency Medical Technology, Certificate

**Program Code: CC.EMT**

Emergency Medical Technicians (EMTs) give immediate care to critically ill or injured people in the pre-hospital setting and provide transport to hospitals, care facilities, and private residences. The ability to work under pressure in challenging environments, think critically to make difficult decisions independently and perform life-saving skills precisely are essential to success in this career.

After successful completion of EMT-101 Emergency Medical Technician Part I, EMT-102 Emergency Medical Technician Part II, and EMT-105 Introduction to Emergency Medical Services students will be eligible to take the EMT certification exam through the National Registry of Emergency Medical Technicians (NREMT). Students must be 18 years of age, have a high school diploma or GED, and have certification from the NREMT before they can apply for an Oregon EMT license.

For more information, contact [healthsciences@clackamas.edu](mailto:healthsciences@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - **MTH-065** Algebra II
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - **WR-121Z** Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - **PSY-101** Human Relations
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- apply standard precautions in infection control during patient assessment and treatment;
- apply medical legal and ethical principles in the prehospital setting;
- quickly assess the scene and patients as to determine critical or non-critical;
- demonstrate basic life support patient care following standard scope of practice protocols;
- extricate and package patients for safe and expedient
- give an effective verbal patient transfer report and document scene and patient information;
- demonstrate knowledge and skills necessary to successfully pass Oregon licensing and National certification.

## Requirements

Fall Term		Credits
BI-231	Human Anatomy & Physiology I	4
EMT-105	Introduction to Emergency Medical Services	3
MA-110	Medical Terminology	4
MTH-065	Algebra II	4
WR-121Z	Composition I	4
<b>Credits</b>		<b>19</b>
Winter Term		Credits
BI-232	Human Anatomy & Physiology II	4
CJA-203	Crisis Intervention	3
COMM-111Z	Public Speaking	4
EMT-101	Emergency Medical Technician Part I	6
<b>Credits</b>		<b>17</b>
Spring Term		Credits
BI-233	Human Anatomy & Physiology III	4
EMT-102	Emergency Medical Technician Part II	6
EMT-109	Emergency Response Communication/Documentation	2
PSY-101	Human Relations	3
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>51</b>

Required: Criminal history background check, proof of immunization, and drug test arranged by the department

## Careers

Career opportunities include:

- EMS/fire agencies
- EMS/ambulance agencies
- search & rescue/emergency management/disaster relief organizations
- hospitals/clinics
- event medical companies

## Employment Skills Training, Certificate

**Program Code: CC.EMPLOYSKILLS**

The Employment Skills Training Certificate provides a quick entry strategy for learning the knowledge and skills necessary to start or change a career path.

The certificate combines college courses with specified hands-on instruction at a local employer to improve employability. The student's goals and needs are combined with information from employers, the labor market and the college to determine the knowledge and skills needed to obtain employment in a specific occupation. The student receives an individualized Employment Skills Training (EST) plan.

In addition to preparing a person for employment, the individualized EST plan guides the student in gaining more education and training which develops the student's career path. The program is open entry/open exit, allowing students to begin any term.

For information contact Student Academic Support Services Department, 503-594-3475, or [www.clackamas.edu/advising](http://www.clackamas.edu/advising).

## Outcomes Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate the knowledge developed on-the-job and in the classroom;
- complete an individualized career plan;
- demonstrate employment skills, job search skills, career management skills and/or introductory contact with an employer(s) and/or hiring manager.

## Requirements

An EST plan must be developed with and approved by a department's faculty advisor.

All of the college's collegiate level credit courses are eligible to be included in the certificate. Developmental courses may be included as prerequisites in a plan but cannot be part of the EST certificate.

## Careers

Completion of an EST certificate can impact any career.

## First-Line Supervisor Fundamentals, Certificate

**Program Code: CC.FIRSTLINEFUND**

The First-Line Supervisor Fundamentals certificate provides the skills in four categories necessary to make a living in retail or food service, human relations in business; business computing; business communication; and fundamentals of management. These skills are necessary for a first-line supervisor career.

The First-Line Supervisor Fundamentals certificate builds directly into the [Retail Management certificate \(p. 211\)](#).

For more information, contact Beverly Forney, 503-594-3115 or [beverlyf@clackamas.edu](mailto:beverlyf@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- describe basic psychological principles that help build relationships among employers and employees;
- create documents using the internet, Microsoft Word, PowerPoint and Excel;
- demonstrate critical skills for successful business communication;
- communicate theories of management.

## Requirements

Code	Title	Credits
BA-131	Introduction to Business Computing	4
BA-206	Management Fundamentals	4
BA-214 or BA-205	Business Communications Business Communications With Technology	3-4
BA-285	Human Relations in Business	4
<b>Total Credits</b>		<b>15-16</b>

## Careers

Career opportunities include:

- entry level and first-line supervisors in retail and food services

## Fitness Technology, Certificate

**Program Code:** CC.FITNESSTECH

The Fitness Technology certificate will give students the core skills and experience needed to enter the fitness industry at an entry level position. Students attain knowledge and learn skills to seek careers related to personal training, nutrition, strength and conditioning specialist as well as other careers in the fitness industry.

The course work for this program includes cooperative work experience which affords the student opportunity for hands-on-experience within the various areas of the health and fitness industry. Students may enter this program at any term.

For information contact Tracy Nelson, 503-594-3274 or [tracyn@clackamas.edu](mailto:tracyn@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - COMM-218Z Interpersonal Communication
- Engage in ethical communication processes that accomplish goals.

### Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate excellent interpersonal skills in the areas of leadership, motivation and communication;
- understand and apply advanced exercise principles related to injury prevention, conditioning, resistance training, and functional training;
- understand and apply nationally recognized standards for fitness and health and be able to communicate the benefits and precautions associated with exercise;
- understand and apply behavior modification strategies to enhance exercise and health behavior change with clients;
- demonstrate excellent leadership abilities, interpersonal communication skills, organizational and presentation skills and other necessary professional qualities demanded of health and fitness professionals in the workforce.

## Requirements

Fall Term		Credits
COMM-218Z	Interpersonal Communication	4
HE-202	Introduction to Fitness Technology Careers	1
PE-240	Strength & Conditioning Theory & Techniques	3
WR-101 or WR-121Z	Workplace Writing or Composition I	4
Electives (p. 193)		3
<b>Credits</b>		<b>15</b>
Winter Term		Credits
COMM-227	Nonverbal Communication	4
HE-252	First Aid/CPR/AED	3
HPE-295	Health & Fitness for Life	3
Electives (p. 193)		4
<b>Credits</b>		<b>14</b>
Spring Term		Credits
HE-201	Personal Training	3
HE-223	Sports Nutrition	3
Select one of the following:		4-5
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
Higher Level Math or Statistics		
PE-280	Physical Education/CWE	3
Electives (p. 193)		4
<b>Credits</b>		<b>17-18</b>
<b>Total Credits</b>		<b>46-47</b>

## Electives

Code	Title	Credits
BA-101	Introduction to Business	4
BA-123	Leadership & Motivation	3
ECE-235	Safety, Health and Nutrition	3
GRN-182	Aging and the Body	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HE-164	Body & Drugs II: Alcohol	3
HE-204	Nutrition & Weight Control	3
HE-207	Introduction to Plant Based Living	3
HE-249	Mental Health	3
HE-250	Personal Health	3
HE-263	Body & Drugs III: Marijuana	3
HE-264	Body & Drugs IV: Other Drugs, Other Addictions	3
PE-185	Physical Education	1
PE-260	Care and Prevention of Athletic Injuries	2
PE-270	Sport and Exercise Psychology	3
PE-294A	Philosophy of Coaching	2
PSY-101	Human Relations	3

## Careers

Career opportunities include:

- personal trainer
- life coach
- nutrition specialist
- strength and conditioning specialist
- athletic coach
- fitness instructor
- physical education instructor

## Geographic Information Systems (GIS) Technology, Certificate

Program Code: CC.GIS

This certificate offers instruction in GIS software, geography, data analysis, cartography, remote sensing, data collection, database theory, and programming.

For information contact Angela Armen, 503-594-3678 or [angela.armen@clackamas.edu](mailto:angela.armen@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply geographic knowledge and GIS software techniques to create high quality analysis, data, applications, and maps;
- design and create geodatabases;
- automate geoprocessing tools to manipulate, generate, display, and analyze GIS data;
- analyze and interpret remotely sensed data including aerial and satellite imagery, LIDAR and GPS data;

- apply programming skills to create and customize applications and tools.

## Requirements

First Term		Credits
GIS-101	Principles of Geospatial Technology	2
GIS-201	Introduction to Geographic Information Systems	3
<b>Credits</b>		<b>5</b>
Second Term		Credits
GIS-202	Intermediate Geographic Information Systems	3
GIS-205	Cartography and Map Making	3
GIS-236	Introduction to Programming for GIS	3
<b>Credits</b>		<b>9</b>
Third Term		Credits
GIS-232	Data Collection & Application	2
GIS-286	Remote Sensing	3
<b>Credits</b>		<b>5</b>
<b>Total Credits</b>		<b>19</b>

## Careers

Career opportunities include:

- GIS technician
- GIS analyst
- mapping technician
- and survey and remote sensing technician
- business
- emergency management
- health sciences
- transportation
- urban planning
- unmanned aerial systems
- natural resource management

## Gerontology, Certificate

Program Code: CC.GERONTOLOGY

The Gerontology program offers a one-year certificate on the study of aging, which is designed for individuals who work with older people. The one-year certificate can provide significant coursework towards the two-year [Human Services Generalist AAS \(p. 155\)](#).

For more information, contact Yvonne Smith at 503-594-3207 or [yvonne@clackamas.edu](mailto:yvonne@clackamas.edu).

## Outcomes

### Related Instruction Outcomes Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or MTH-098 College Math Foundations
- Use appropriate mathematics to solve problems.



## Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

## Human Relations

- 1 course - HS-156 Conducting Human Service Interviews
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- describe the different career options available in the field of gerontology;
- apply gerontological concepts to practice settings working with older adults;
- demonstrate an understanding of current community resources available to older adults and how to access them;
- communicate effectively with co-workers and clients of all ages;
- differentiate between normal aging and disease processes associated with aging, especially chronic illness and dementia;
- provide support to older adults grieving a loss (such as loss of spouse, job, or independence) by utilizing knowledge and skills of grief and bereavement.

## Requirements

Fall Term		Credits
GRN-181	Issues in Aging	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
WR-101 or WR-121Z	Workplace Writing or Composition I	4
<b>Electives (p. 194)</b>		<b>3</b>

**Credits 13**

Winter Term		Credits
GRN-182	Aging and the Body	3
GRN-184	Aging & the Individual	3
HS-154	Community Resources	3
Select one of the following:		4
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
MTH-098	College Math Foundations	

**Credits 13**

Spring Term		Credits
GRN-183	Death and Dying	3
HS-156	Conducting Human Service Interviews	3
HS-170	Preparation for Field Experience in Human Services	1
<b>Electives (p. 194)</b>		<b>6.5</b>

**Credits 13.5**

Summer Term		Credits
HS-270	Human Services Practicum Seminar	2

GRN-280	Gerontology/CWE	4
<b>Credits</b>		<b>6</b>
<b>Total Credits</b>		<b>45.5</b>

## Electives

Code	Title	Credits
COMM-140	Introduction to Intercultural Communication	4
CS-120	Survey of Computing	4
ED-258	Culturally Responsive Teaching & Education	3
FN-110	Personal Nutrition	3
FYE-101	First Year Experience Level I	2
GRN-165	Life Enrichment With Older Adults	3
GRN-290	Special Topics in Gerontology	3
HE-164	Body & Drugs II: Alcohol	3
HS-100	Introduction to Human Services	3
HS-103	Ethics for Human Service Workers	2
HS-211	Infectious Diseases and Harm Reduction	1
HS-216	Group Counseling Skills	3
HS-232	Case Management	3
HS-256	Advanced Interviewing Skills With Theory	3
NUR-100	Nursing Assistant I	6.5
NUR-100C	Nursing Assistant I Clinical	0
NUR-101	Certified Nursing Assistant II	5
NUR-101C	Certified Nursing Assistant II Acute Care Clinical	0
PSY-219	Introduction to Abnormal Psychology	4

Other electives may be approved by the program advisor

## Careers

Career opportunities include:

- activity director
- volunteer coordinator
- senior services case worker
- information and referral worker
- client advocate
- administrative and support personnel in senior residential facilities

## Healthcare Careers, Certificate

Program Code: CC.HLHCAREERS

This certificate prepares students for a career in healthcare by introducing them to the soft skills, communication skills, and terminology necessary to interact within a breadth of healthcare disciplines. Students will become versed in medical office administrative services such as patient intake and scheduling. Courses within the certificate are common across Health Sciences programs at Clackamas Community College.

For information contact Tracy Pantano-Rumsey, [tracy.pantanorumsey@clackamas.edu](mailto:tracy.pantanorumsey@clackamas.edu) or 503-594-6131, or Phil Reid, [philtr@clackamas.edu](mailto:philtr@clackamas.edu) or 503-594-0623.

### Outcomes

#### PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

- demonstrate the ability to serve in an entry-level position using correct laboratory, medical, and anatomical terminology to effectively and appropriately communicate, both verbally and nonverbally in healthcare settings;
- understand, apply, and communicate state and national laboratory regulations, including infection control, health and safety, and ethical considerations.

### Requirements

Code	Title	Credits
MA-110	Medical Terminology	4
MA-135	Communications and Ethical Practices in Healthcare Settings	3
PSY-101	Human Relations	3
WR-101 or WR-121Z	Workplace Writing Composition I	4
<b>Total Credits</b>		<b>14</b>

### Careers

Career opportunities include:

- assist and interact with healthcare professionals
- data input
- intake/reception
- other administrative duties as assigned in a variety of healthcare settings

## High Purity Water, Certificate

Program Code: CC.HIPURITYWATER

The High Purity Water certificate program provides classes and hands-on experience with advanced water treatment methods used in the high-tech industry. The certificate program has been developed in cooperation with Intel Corporation. Based on student demand WET-125 High Purity Water Production I and WET-135 High Purity Water Production II may be offered biannually.

For information contact Matthew LaForce, 503-594-3148 or [laforce@clackamas.edu](mailto:laforce@clackamas.edu)

### Outcomes

#### Program Outcomes

Upon successful completion of this program, students should be able to:

- correctly operate and maintain SCADA equipment and other instrumentation involved in the general operation of facilities where high purity water is produced;
- perform calculations related to electrical circuit operation and hydraulics;
- correctly use reverse osmosis-based equipment to manufacture high purity water.

### Requirements

Fall Term		Credits
MTH-082E	Math for High Purity Water	1
WET-125	High Purity Water Production I	3
WET-245	Instrumentation & Control	4
<b>Credits</b>		<b>8</b>
Winter Term		Credits
WET-135	High Purity Water Production II	4
<b>Credits</b>		<b>4</b>
Spring Term		Credits
WET-180	Water & Environmental Projects I	5
<b>Credits</b>		<b>5</b>
<b>Total Credits</b>		<b>17</b>

### Careers

Career opportunities include:

- high-purity lab technician
- high-purity production technician

## Horticulture, Certificate

Program Code: CC.HORT

The Horticulture Department provides quality education and training for industry and community members. Greenhouse, nursery, landscape, arboriculture, and organic farming courses integrate technical knowledge, critical thinking, and environmental stewardship.

Horticulture is a hands-on, project-based curriculum with a variety of lecture-lab style classes where students practice industry-related skills and experience growing and caring for plants in all seasons throughout the year. Learning activities involve students in the day-to-day operation of a wide range of power and hand tools used in the trade, including: mowers, rototillers, tractors, skid steer loader, pruning tools, and greenhouse equipment. Students cultivate plants in CCC's extensive farm, ornamental gardens, and greenhouse facilities. This degree sets a foundation for general horticulture while allowing students to "choose their own adventure" with a wide selection of elective courses that meet their interests.

Students may begin this program any term, although a fall start is recommended. Degree options include a one-year certificate program or a

two-year **Horticulture AAS** (p. 152). Following the course offerings in the order listed will allow for completion in the one or two-year period.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or [april.chastain@clackamas.edu](mailto:april.chastain@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - BA-285 Human Relations in Business or COMM-100Z Introduction to Communication
- Engage in ethical communication processes that accomplish goals.

### Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate a broad range of skills in the production and maintenance of plants, including: safe use of tools and equipment, propagation from seeds and cuttings, landscape maintenance activities, growing in a greenhouse environment, and vegetable bed preparation;
- identify common woody plants in the landscape;
- implement IPM strategies in the horticulture industry;
- use a basic understanding of plant biology and soil science to make sound decisions in the production and maintenance of plants;
- communicate effectively with co-workers and customers through speaking, writing, and computer technology.

### Requirements

Fall Term		Credits
HOR-111	Horticulture Practicum/Fall	2
HOR-115	Horticulture Safety	1
HOR-223	Applied Plant Science	4
HOR-226	Plant Identification/Fall	4
Select one of the following:		4-5
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
Higher Level Math or Statistics		
<b>Credits</b>		<b>15-16</b>
Winter Term		
FYE-101	First Year Experience Level I	2
HOR-133	Horticulture Practicum/Winter	2
HOR-216	Integrated Pest Management	3
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	4

HOR-230	Equipment Operation & Maintenance	2
<b>Credits</b>		<b>15</b>
Spring Term		
BA-285	Human Relations in Business	4
or	or Introduction to Communication	
COMM-100Z		
HOR-112	Horticulture Career Exploration	2
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-143	Horticulture Practicum/Spring	2
HOR-228	Plant Identification/Spring	4
<b>Credits</b>		<b>16</b>
Summer Term		
HOR-280	Horticulture/CWE	3
WR-101	Workplace Writing	4
or WR-121Z	or Composition I	
<b>Credits</b>		<b>7</b>
<b>Total Credits</b>		<b>53-54</b>

### Careers

Career opportunities include:

- nursery and garden center assistant manager and associate
- nursery production
- greenhouse assistant grower
- organic food production
- supply and equipment sales
- landscape design, installation and maintenance worker
- parks department personnel
- groundskeeper

## Human Resource Management, Certificate

**Program Code: CC.HUMANRESMNGT**

This certificate is recommended for students and/or professionals currently working or intending to work in the human resource field. This certificate serves as a pathway to employment or advancement in human resource management. This certificate also helps with the professional standards and education requirements for careers in Human Resources.

For information call Michael Moiso, 503-594-3770 or [mmoiso@clackamas.edu](mailto:mmoiso@clackamas.edu).

### Outcomes

#### Related Instruction Outcomes

##### Computation

- 1 course - BA-104 Business Math or MTH-065 Algebra II
- Use appropriate mathematics to solve problems.

## Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

## Human Relations

- 1 course - BA-285 Human Relations in Business
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- describe the impacts of the major laws and Supreme Court decisions affecting Human Resource Managers;
- describe disparate treatment and adverse impact, and explain the Uniform Guidelines related to national origin, religion, and other discrimination;
- conduct job analyses;
- conduct recruitment and selection processes, and advise hiring supervisors regarding legal and ethical issues;
- implement and maintain Human Resource Management processes, including Training and Development and Performance Management, under direction of HR Manager;
- describe issues related to financial equity and direct and indirect financial compensation;
- apply reflective thinking and self-management in professional settings;
- explain legal and process considerations related to collective bargaining and Collective Bargaining Agreement management.

## Requirements

Fall Term		Credits
BA-101	Introduction to Business	4
BA-104 or MTH-065	Business Math or Algebra II	3-4
BA-131	Introduction to Business Computing	4
WR-121Z	Composition I	4
<b>Credits</b>		<b>15-16</b>
Winter Term		Credits
BA-205	Business Communications With Technology	4
BA-208	Employee and Labor Relations	4
BA-224	Human Resource Management	4
BA-285	Human Relations in Business	4
<b>Credits</b>		<b>16</b>
Spring Term		Credits
BA-226	Business Law I	4
BA-229	Employment Law	4
BA-254	Basic Compensation & Benefits	4
<b>Electives (p. 197)</b>		<b>3-4</b>
<b>Credits</b>		<b>15-16</b>
<b>Total Credits</b>		<b>46-48</b>

Courses in this program can be applied to satisfy requirements in the [Business AAS \(p. 134\)](#).

## Electives

Any [BA \(p. 255\)](#) or [BT \(p. 258\)](#) course not included in the program.

## Careers

Career opportunities include:

- human resource manager
- human resource generalist
- human resource specialist
- human resource assistant
- information and records clerk

## Human Services Generalist, Certificate

**Program Code: CC.HUMANSERVEN**

Both the one-year certificate and the two-year [Human Service Generalist AAS \(p. 155\)](#) offer training for entry-level positions in diverse social services agencies. The degree combines academic coursework with supervised field experience. In addition to general course work in human services, students may select a variety of approved elective certificates/courses to focus on different concentration areas.

For information contact Yvonne Smith, 503-594-3207 or [yvones@clackamas.edu](mailto:yvones@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or MTH-098 College Math Foundations
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 1 course - HS-156 Conducting Human Service Interviews
- Engage in ethical communication processes that accomplish goals

## Program Outcomes

Upon successful completion of this program, students should be able to:

- apply knowledge about the history, development and function of individuals, families and other systems;
- practice beginning-level professional communication skills both verbally and in writing in a human services setting;
- adhere to the professional ethics, attitudes and values necessary for effective human service work.

## Requirements

Fall Term		Credits
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HS-100	Introduction to Human Services	3
WR-101 or WR-121Z	Workplace Writing or Composition I	4
<b>Electives (p. 198)</b>		<b>5</b>
<b>Credits</b>		<b>15</b>
Winter Term		
HDF-260 or GRN-184	Understanding Child Abuse and Neglect or Aging & the Individual	3
HS-103	Ethics for Human Service Workers	2
HS-154	Community Resources	3
Select one of the following:		4
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
MTH-098	College Math Foundations	
<b>Electives (p. 198)</b>		<b>3</b>
<b>Credits</b>		<b>15</b>
Spring Term		
HDF-140 or SOC-210	Contemporary American Families or Marriage, Family, & Intimate Relations	3-4
Select one of the following:		3
HE-164	Body & Drugs II: Alcohol	
HE-263	Body & Drugs III: Marijuana	
HE-264	Body & Drugs IV: Other Drugs, Other Addictions	
HS-156	Conducting Human Service Interviews	3
HS-170	Preparation for Field Experience in Human Services	1
<b>Credits</b>		<b>10-11</b>
Summer Term		
HS-270	Human Services Practicum Seminar	2
HS-280	Human Services Generalist I: CWE/ Practicum	3
<b>Credits</b>		<b>5</b>
<b>Total Credits</b>		<b>45-46</b>

## Electives

Any course from the following programs not included in the program:

[Gerontology \(p. 193\)](#), [Gerontology for Health Care Professionals \(p. 219\)](#), [Nursing Assistant - Gerontology Specialist \(p. 224\)](#), [Juvenile Corrections \(p. 200\)](#), or [Early Childhood Education & Family Studies \(p. 187\)](#).

Any course numbered 100 or above in the following prefixes not included in the program: [ASL \(p. 238\)](#), [CJA \(p. 265\)](#), [COMM \(p. 260\)](#), [ECE \(p. 270\)](#), [ED \(p. 273\)](#), [FR \(p. 286\)](#), [FYE \(p. 285\)](#), [GER \(p. 289\)](#), [GRN \(p. 290\)](#), [HD \(p. 295\)](#), [HDF \(p. 296\)](#), [HS \(p. 297\)](#), [MA \(p. 305\)](#), [MTH \(p. 303\)](#), [PSY \(p. 325\)](#), [SOC \(p. 328\)](#), [SPN \(p. 328\)](#), [STAT, WS \(p. 334\)](#)

Any of the following courses not included in the program:

Code	Title	Credits
HE-164	Body & Drugs II: Alcohol	3
HE-252	First Aid/CPR/AED	3
HE-263	Body & Drugs III: Marijuana	3
HE-264	Body & Drugs IV: Other Drugs, Other Addictions	3

## Careers

Career opportunities include:

- case managers and assistants
- resource specialists
- family advocates
- client advocates
- intake workers
- family assistance workers
- volunteer coordinators

## Industrial Maintenance Technology, Certificate

**Program Code: CC.INDMAINTECH**

Industrial Maintenance Technology (IMT) is a program that prepares students to succeed as maintenance technicians in industry. IMT graduates perform mechanical and electrical maintenance of manufacturing equipment such as machine tools, automated process equipment and buildings systems to keep production operational. Maintenance technicians study subjects from a wide variety of technical disciplines ranging from welding to industrial electronics to robotics. This is a high-wage, high-demand field that typically attracts talented people who are excellent problem solvers and enjoy challenging work.

For information contact Mike Mattson, 503-594-3322 or [mattsonm@clackamas.edu](mailto:mattsonm@clackamas.edu).

## Outcomes

### Related Instruction Outcomes Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems.

### Communication

- 1 course - WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

### Human Relations

- 3 credits - See [Related Instruction \(p. \)](#) for course list
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- work safely in an industrial environment around machinery, power equipment, heat, chemicals and electricity;

- troubleshoot, install and repair basic electromechanical systems by using knowledge of electrical and mechanical fundamentals, diagnostic instruments, and hand and power tools;
- use knowledge of manufacturing and welding processes to execute the repair and replacement of machine elements;
- communicate effectively through graphical means including schematics, diagrams, engineering drawing and sketches to determine system functions to effect repairs and improve performance.

- maintenance machinists
- building engineers
- robotics technicians
- industrial electrician apprentices

## Industrial Maintenance Technology Mechanical Maintenance, Certificate

Program Code: CC.IMTMECHMAIN

Industrial Maintenance Technology (IMT) Mechanical Maintenance certificate is a program that prepares students to succeed as mechanical maintenance technicians in industry. Graduates perform mechanical maintenance of manufacturing equipment such as machine tools, process equipment and buildings systems to keep production operational. Mechanical Maintenance technicians study subjects from a wide variety of technical disciplines ranging from welding to fluid power. This is a high-wage, high-demand field that typically attracts talented people who are excellent problem solvers and enjoy challenging work.

For information contact Mike Mattson, 503-594-3322 or [mattsonm@clackamas.edu](mailto:mattsonm@clackamas.edu)

### Outcomes Related Instruction Outcomes Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems.

### Communication

- 1 course - WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

### Human Relations

- 3 credits - See [Related Instruction \(p. 230\)](#) for course list
- Engage in ethical communication processes that accomplish goals.

### Program Outcomes

Upon successful completion of this program, students should be able to:

- work safely in an industrial environment around machinery, power equipment, heat, chemicals and electricity;
- troubleshoot, install and repair basic electromechanical systems by using knowledge of electrical and mechanical fundamentals, diagnostic instruments, and hand and power tools;
- use knowledge of manufacturing and welding processes to execute the repair and replacement of machine elements;
- communicate effectively through graphical means including schematics, diagrams, engineering drawing and sketches to determine system functions to effect repairs and improve performance.

### Requirements

Fall Term		Credits
IMT-104	Reading Schematics and Symbols	2
IMT-108	Rigging and Lifting	2

### Requirements

Fall Term		Credits
EET-139	Principles of Troubleshooting I	2
IMT-104	Reading Schematics and Symbols	2
MFG-103	Machining for Fabrication & Maintenance	3
MFG-130	Basic Electricity I	3
MTH-050	Technical Mathematics I <sup>1</sup>	4
<b>Credits</b>		<b>14</b>
Winter Term		
IMT-120	Industrial Machinery I	3
MFG-109	Computer Literacy for Technicians	3
MFG-131	Basic Electricity II	3
MFG-140	Principles of Fluid Power	3
MTH-080	Technical Mathematics II <sup>1</sup>	3
<b>Human Relations requirement (p. )</b>		<b>3</b>
<b>Credits</b>		<b>18</b>
Spring Term		
IMT-110	Preventative Maintenance	2
IMT-220	Industrial Machinery II	3
MFG-107	Industrial Safety & First Aid	3
MFG-132	Basic Electricity III	3
MFG-221	Materials Science	3
WR-101	Workplace Writing <sup>1</sup>	4
<b>Electives (p. 199)</b>		<b>3</b>
<b>Credits</b>		<b>21</b>
<b>Total Credits</b>		<b>53</b>

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

### Electives

Any [CDT \(p. 264\)](#), [EET \(p. 274\)](#), [GIS \(p. 287\)](#), [MET \(p. 302\)](#), [MFG \(p. 302\)](#), [MTT \(p. 300\)](#), [SM \(p. 274\)](#), or [WLD \(p. 332\)](#) course not included in the program, or other technical course with approval.

### Careers

Career opportunities include:

- maintenance mechanics
- millwrights
- process technicians



MFG-103	Machining for Fabrication & Maintenance	3
MFG-107	Industrial Safety & First Aid	3
MFG-109	Computer Literacy for Technicians	3
MTH-050	Technical Mathematics I	4
<b>Credits</b>		<b>17</b>
<b>Winter Term</b>		
IMT-120	Industrial Machinery I	3
MFG-140	Principles of Fluid Power	3
MTH-080	Technical Mathematics II	3
WLD-150	Welding Processes	4
Human Relations requirement (p. )		3
<b>Credits</b>		<b>16</b>
<b>Spring Term</b>		
IMT-110	Preventative Maintenance	2
IMT-220	Industrial Machinery II	3
MFG-221	Materials Science	3
WR-101	Workplace Writing	4
Electives (p. 200)		3
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>48</b>

## Electives

Any CDT (p. 264), EET (p. 274), GIS (p. 287), MET (p. 302), MFG (p. 302), MTT (p. 300), SM (p. 274), or WLD (p. 332) course not included in the program, or other technical course with approval.

## Careers

Career opportunities include:

- maintenance mechanics
- millwrights
- process technicians
- maintenance machinists
- building engineers
- robotics technicians
- industrial electrician apprentices

## Juvenile Corrections, Certificate

**Program Code:** CC.CORRECTIONSJUV

The Juvenile Corrections Certificate is a one-year program developed in cooperation with the Oregon Youth Authority. Students are prepared to interview for an entry-level position in a juvenile correctional facility. The certificate curriculum is challenging and is aimed at providing the skills most desired for working within the juvenile corrections system in Oregon.

Course work includes cooperative work experience, hands-on experience in a correctional agency enabling students to demonstrate the skills and knowledge acquired in the academic courses in a practical manner.

For more information, contact Sharron Furno 503-594-6224 or [sharron.furno@clackamas.edu](mailto:sharron.furno@clackamas.edu)

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-098 College Math Foundations
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - HS-156 Conducting Human Service Interviews
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- explain the function of juvenile corrections in the United States in terms of historical roots, structure and contemporary issues;
- determine causes of juvenile delinquency, and identify system responses based upon the various theories of causation;
- identify conditions that are specific to working with juvenile offenders in an institutional or community setting, and develop strategies for coping with those conditions;
- analyze contemporary issues in the juvenile corrections system in the United States and outline possible responses to those issues;
- communicate effectively both verbally and in writing.

## Requirements

Fall Term		Credits
CJA-252	Introduction to Restorative Justice	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HS-210	Motivational Interviewing	3
MTH-098	College Math Foundations	4
WR-121Z	Composition I	4
<b>Credits</b>		<b>17</b>

**Winter Term**

CJA-201	Juvenile Delinquency	4
CJA-203	Crisis Intervention	3
HS-156	Conducting Human Service Interviews	3
LIB-101	Introduction to Library Research	1
PSY-215	Introduction to Developmental Psychology	4

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**Credits** 15

**Spring Term**

CJA-130	Introduction to Corrections	3
CJA-232	Case Management	3
CJA-280	Criminal Justice/Corrections/CWE	3
CWE-281	Cooperative Work Experience Seminar	0
HD-161	Multicultural Awareness	3
HDF-260	Understanding Child Abuse and Neglect	3

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**Credits** 15

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**Total Credits** 47

## Careers

Career opportunities include:

- youth correctional counselor
- juvenile detention officer
- group life coordinator

Career opportunities are within secure facilities or in the community

## Landscape Practices, Certificate

**Program Code:** CC.LANDSCAPEPRAC

The Landscape Practices certificate prepares students to work in the landscaping industry by providing them with hands-on experience, and a basic understanding of the activities involved in the installation and maintenance of landscapes.

Sustainable practices, such as the use of Integrated Pest Management, water-efficient landscapes, and techniques that protect and care for the soil are emphasized throughout the program. Students use industry-standard equipment and practices in the care of CCC's extensive landscape facilities, including an arboretum, water-efficient demonstration garden, large turf areas, and several annual, herbaceous perennial, and shrub beds.

CCC's landscape program is the only one in Oregon accredited by the National Association of Landscape Professionals (NALP). Students have the opportunity to compete on the team that attends NALP's National Collegiate Landscape Competition each year.

Following the course offerings in the order listed is not required, but will allow for completion in a one-year period.

## Oregon State University Transfer Agreement

Some horticulture classes transfer to Oregon State University as part of a bachelor's degree. Landscape students planning to continue their studies at a four-year college should consult the Horticulture advisor to obtain the most recent transfer information.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or [april.chastain@clackamas.edu](mailto:april.chastain@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate competency in sustainable landscape maintenance and installation activities, including: safe use of tools and equipment, operation of irrigation systems, pruning and training techniques, turf maintenance, hardscape installation and reading/installing from a design plan;
- identify common woody and herbaceous plants in the landscape;
- recognize key pests in the landscape and follow IPM strategies;
- use a basic understanding of soil science to make sound decisions in the maintenance of landscapes.

## Requirements

Fall Term		Credits
HOR-115	Horticulture Safety	1
HOR-224	Landscape Installation	3
HOR-226	Plant Identification/Fall	4
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
<b>Credits</b>		<b>12</b>

Winter Term		Credits
HOR-131	Tree & Shrub Pruning	3
HOR-216	Integrated Pest Management	3
HOR-229	Introduction to Landscape Design	3
HOR-230	Equipment Operation & Maintenance	2
HOR-237	Disease Identification	2
<b>Credits</b>		<b>13</b>

Spring Term		Credits
HOR-120	Pesticide Laws & Safety	1
HOR-123	Landscape Maintenance	3
HOR-140	Soils	3
HOR-228	Plant Identification/Spring	4
HOR-240	Irrigation Practices	3
<b>Credits</b>		<b>14</b>

Summer Term		Credits
HOR-280	Horticulture/CWE	3
<b>Credits</b>		<b>3</b>
<b>Total Credits</b>		<b>42</b>

## Careers

Career opportunities include:

- landscape design/build company
- estate garden
- parks department
- tree care company
- golf course
- self-employed maintenance contractor

# Machine Tool Technology, Certificate

**Program Code: CC.MACHTECH**

Course work in machine tool technology prepares students for careers in high-tech manufacturing by producing products to exacting industrial standards utilizing current manual and computer-aided machine tool technology. Many classes are taught in a flexible, open-lab format and students may enter the program any term.

Individualized daytime and evening instruction is provided in the operation of machine tools such as: lathes, mills, surface and cylindrical grinders and common machine shop equipment. Included in the degree program is the study of computer numerical control (CNC) programming and machining for milling, turning and electrical discharge machining (EDM), as well as courses in computer-aided manufacturing (CAM) utilizing current industrial CAD/CAM software. Quality control is stressed while students are taught a wide range of measuring and inspection techniques. Other topics include courses offered in welding, materials science and basic electricity. Many students enroll in these courses to upgrade existing job skills and several of our courses satisfy the continuing education unit (CEU) requirements of local apprenticeships and trade organizations.

## Short Term Training

For students who need a quick-entry strategy into the workforce, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information. A short-term training certificate is available.

For information contact the Industrial Technology Department, 503-594-3318.

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3 credits - See [Related Instruction \(p. \)](#) for course list
- Engage in ethical communication processes that accomplish goals.

### Program Outcomes

Upon successful completion of this program, students should be able to:

- work independently on manual machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies;
- work independently on CNC machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies;

- apply critical thinking skills to solve common machining and manufacturing problems;
- work safely in an industrial environment around machinery, power tools, electricity and chemicals.

## Requirements

Fall Term		Credits
MFG-104	Print Reading	3
MFG-107	Industrial Safety & First Aid	3
MTH-050	Technical Mathematics I <sup>1</sup>	4
MTT-111	Manual Machining I	4
MTT-121	CNC I: Set-Up and Operation	4
<b>Credits</b>		<b>18</b>
Winter Term		Credits
MFG-109	Computer Literacy for Technicians	3
MTH-080	Technical Mathematics II	3
MTT-112	Manual Machining II	4
MTT-122	CNC II: Programming and Operation	4
Human Relations requirement (p. )		3
<b>Credits</b>		<b>17</b>
Spring Term		Credits
MTT-113	Manual Machining III	4
MTT-123	CNC III: Applied Programming and Operation	4
MTT-141	CAD/CAM I	4
WR-101	Workplace Writing <sup>1</sup>	4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>51</b>

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

## Careers

Career opportunities include:

- machinist
- tool maker
- CNC programmer/operator
- CAD/CAM technicians

## Marketing, Certificate

**Program Code: CC.MARKETING**

This certificate focuses on technical marketing skills in areas such as need identification, product and service development, determining price, communicating information to potential customers, and distributing the products to customers.

For information contact Beverly Forney, 503-594-3115 or [beverlyf@clackamas.edu](mailto:beverlyf@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - BA-104 Business Math
- Use appropriate mathematics to solve problems

#### Communication

- 1 course - WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences

#### Human Relations

- 1 course - BA-285 Human Relations in Business
- Engage in ethical communication processes that accomplish goals

## Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate the skills necessary for entry-level employment in areas such as retail and wholesale sales, marketing management, market research and advertising and distribution;
- develop a business plan;
- develop a marketing plan;
- develop a promotional plan;
- launch an entrepreneurial endeavor;
- prepare and deliver effective presentations;
- demonstrate an understanding of fundamental business concepts through the integration of the functional areas of business into a comprehensive plan.

## Requirements

Fall Term		Credits
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-131	Introduction to Business Computing	4
WR-121Z	Composition I	4
<b>Credits</b>		<b>15</b>
Winter Term		Credits
BA-223	Principles of Marketing	4
BA-270	Social Media Marketing	4
BA-239	Advertising	4
BA-285	Human Relations in Business	4
<b>Credits</b>		<b>16</b>
Spring Term		Credits
BA-205	Business Communications With Technology	4
BA-226	Business Law I	4
BA-238	Sales	4
BA-261	Consumer Behavior	4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>47</b>

Courses in this program can be applied to satisfy elective requirements in the [Business AAS \(p. 134\)](#).

## Careers

Career opportunities include:

- wholesale and manufacturing sales representative
- insurance and financial sales agents
- marketing and advertising assistants

## Mastercam, Certificate

**Program Code: CC.MASTERCAM**

The Mastercam program is comprised of a series of three classes that prepare students to use Mastercam for 2D and 3D model building, toolpath selection and creation, and toolpath verification. Students will learn all basic 2D milling toolpaths, 3D surfacing toolpaths, and lathe with live-tooling toolpaths.

For information contact the Industrial Technology Department, 503-594-3318.

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- utilize Mastercam for programming two dimensional toolpaths, advanced surface toolpaths, and lathe/mill-turn toolpaths;
- attain the skills necessary for employment as CAD/CAM CNC programmer.

## Requirements

Code	Title	Credits
MFG-271	Mastercam Mill I	4
MFG-272	Mastercam Mill II	4
MFG-273	Mastercam, Lathe, Mill, Multi-Axis	4
<b>Total Credits</b>		<b>12</b>

## Careers

Career opportunities include:

- CNC programmer

## Mechatronics, Certificate

**Program Code: CC.MECHATRONICS**

This certificate prepares students to work in automated industrial environments, by building skills related to diagnosis and repair of automated systems and application of programming for industrial automation. The program also provides an introduction to robotics and industrial motion control, giving students the opportunity to learn basic operation, programming, and applications of a typical FANUC six-axis robot. Many of the courses are also part of the [Computer-Aided Manufacturing \(p. 136\)](#), [Electronics Engineering Technology \(p. 149\)](#), and [Industrial Maintenance Technology \(p. 157\)](#) programs.

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- use appropriate tools to measure dimensions, force, work, torque, and power;
- select and integrate linear motion and power transmission components to create an automated manufacturing system;
- create software applications of automation and data acquisition, perform software simulations to verify correct motion and timing of programs;
- interface robotics hardware with a CNC machine tool to facilitate automated machining.

### Requirements

Fall Term		Credits
EET-137 or MFG-130	Electrical Fundamentals I or Basic Electricity I	3-4
EET-215	Technical Mechanics	3
<b>Credits</b>		<b>6-7</b>
Winter Term		Credits
EET-225	Mechatronics I	2
MFG-209	Programming & Automation for Manufacturing	3
Select one of the following:		3
MTH-080	Technical Mathematics II	
Higher Level Math or Statistics		
<b>Credits</b>		<b>8</b>
Spring Term		Credits
EET-235 or MFG-OSU	Mechatronics II or Introduction to Mechatronics	2-3
MFG-219	Robotics	3
<b>Credits</b>		<b>5-6</b>
<b>Total Credits</b>		<b>19-21</b>

MFG-OSU Introduction to Mechatronics is a course taken at Oregon State University. MFG-OSU Introduction to Mechatronics must be taken at Oregon State University and there may be prerequisites that need to be taken prior. Work with an academic advisor to help you determine if you meet the prerequisites for this course.

### Careers

Career opportunities include:

- electromechanical technician
- automation specialist
- manufacturing engineering technician
- system integrator
- robotics technician
- industrial maintenance mechanic

## Medical Assistant, Certificate

Program Code: CC.MEDASST

Medical assistants function as integral members of the healthcare delivery team by performing administrative, clinical and other general functions of the ambulatory care setting. The Clackamas Community College Medical Assistant (MA) program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) upon the recommendation of:

The Medical Assisting Educational Review Board, MAERB (CAAHEP)  
25400 U.S. Highway 19 N. Ste. 158  
Clearwater, FL 33763  
telephone: 727-210-2350  
online: [www.caahep.org](http://www.caahep.org)

For more information, contact [healthsciences@clackamas.edu](mailto:healthsciences@clackamas.edu).

### Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-121Z Composition I (recommended) or WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - PSY-101 Human Relations
- Engage in ethical communication processes that accomplish goals.

### Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate entry level employment skills (psychomotor/affective);
- demonstrate knowledge of medical assistant concepts (cognitive);
- communicate relevant patient information concisely and accurately;
- apply infection controls (medical/surgical), safety and bloodborne pathogen principles and techniques to the practice of medical assisting;
- apply medical laws and ethical principles to the practice of medical assisting;
- calculate and administer medications: oral and parenteral;
- describe the structure, function and organization of the human body across the lifespan.

### Requirements

This limited entry program requires the applicant to meet the program requirements prior to being formally admitted into the program. Information regarding specific requirements and timelines is located at <https://www.clackamas.edu/academics/departments-programs/medical-assistant-cc>.

Students will participate in unpaid, supervised externships in the ambulatory care setting.

Current American Heart Association (AHA) BLS Provider (provider level CPR) and First Aid (AHA Heartsaver) certification are required during

practicums. All students will be required to complete a criminal history background, provide proof of immunization, and students will be asked to take a drug test as arranged by the department.

Disclaimer: Clinical training is required in order to complete certain Health Sciences programs offered by Clackamas Community College(CCC).

Although CCC does not restrict program entry based on age, some college partners, such as healthcare agencies, organizations, and clinics, require students to be at least 18 years of age before they can participate in clinical training. Students who intend to enroll prior to reaching 18 years of age should consult with the appropriate Health Sciences program director or administrator to determine when clinical training begins for their program and to understand any limitations.

Code	Title	Credits
<b>Prerequisites to Acceptance</b>		
Select one of the following:		4
BI-120	Introduction to Human Anatomy and Physiology	
BI-101 & BI-102	General Biology; Cellular Biology and General Biology; Animal Systems	
BI-231 & BI-232 & BI-233	Human Anatomy & Physiology I and Human Anatomy & Physiology II and Human Anatomy & Physiology III	
MA-110	Medical Terminology	4
Select one of the following:		4
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
Higher Level Math or Statistics		
WR-121Z or WR-101	Composition I (Recommended) Workplace Writing	4
<b>Fall Term</b>		
MA-150	Medical Office Practices	4
MA-152	Examination Room Techniques I	3
MA-152L	Examination Room Techniques I Lab	1
MA-154	Body Systems and Pharmacology	4
MA-158	Seminar I	2
PSY-101	Human Relations	3
<b>Credits</b>		<b>17</b>
<b>Winter Term</b>		
MA-156	Phlebotomy I	1
MA-156L	Phlebotomy I Lab	1
MA-160	Insurance & Health Information Management	3
MA-162	Examination Room Techniques II	3
MA-162L	Examination Room Techniques Lab II	1
MA-164	Clinical Lab Procedures I	1
MA-164L	Clinical Lab Procedures I Lab	1
MA-168	Seminar II	2
<b>Credits</b>		<b>13</b>
<b>Spring Term</b>		
<b>Weeks 1-5</b>		
MA-166	Phlebotomy II	1
MA-166L	Phlebotomy II Lab	1
MA-174	Clinical Lab Procedures II	1
MA-174L	Clinical Lab Procedures II Lab	1

MA-188	Certification Exam Review	2
<b>Weeks 6-11</b>		
MA-178	Medical Assistant Practicum	9
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>45</b>

All courses must be passed with a C or better.

## Careers

Career opportunities include:

- employment in the ambulatory healthcare facilities
- outpatient surgical centers
- entry-level medical assistant

## Medical Billing and Coding, Certificate

**Program Code: CC.MEDBILLCODE**

Looking for a career in healthcare but don't want to give injections or draw blood? Work with physicians and help patients in the front office with the Medical Billing and Coding certificate from Clackamas Community College.

Medical Coders analyze the doctor's documentation using specific guidelines to determine the correct codes for billing the doctor's services. The insurance biller will apply healthcare laws to create and submit the claims for the doctor's work. The insurance biller will work with the insurance companies and patients to track the claims through payment of services rendered.

The work of the coder and insurance biller can produce prompt and proper payments to your doctor and lower their costs by applying current health insurance regulations and practices to healthcare billing, coding, and reimbursement. After completing this program, students will be exposed to the knowledge to prepare them to sit for the national certification exams through the AAPC: The Certified Professional Biller (CPB) and Certified Professional Coder (CPC).

For information, contact [healthsciences@clackamas.edu](mailto:healthsciences@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- perform medical insurance billing, including producing claims and making changes to claims;
- apply coding and billing guidelines and laws;
- analyze insurance reimbursement forms to ensure insurance companies have paid accurately;
- post payments/adjustments to patient accounts;
- explain provider chart notes and code patient visits accurately for billing;
- communicate with providers and patients about billing and coding;
- describe healthcare laws that pertain to medical billing and coding;
- maintain confidentiality and security of patient data.



## Requirements

Code	Title	Credits
<b>Program Requisites</b>		
Select one of the following:		4
BI-120	Introduction to Human Anatomy and Physiology	
BI-231 & BI-232 & BI-233	Human Anatomy & Physiology I and Human Anatomy & Physiology II and Human Anatomy & Physiology III	
MA-110	Medical Terminology	4
WR-121Z	Composition I	4
<b>Winter Term</b>		
		<b>Credits</b>
MBC-115	Insurance Billing and Reimbursement I	4
MBC-120	Introduction to Medical Coding	3
MBC-135	Law and Ethics for Healthcare Professions	3
MTH-060 or MTH-098	Algebra I or College Math Foundations	4
		<b>Credits</b>
		<b>14</b>
<b>Spring Term</b>		
BA-131	Introduction to Business Computing	4
MBC-116	Insurance Billing and Reimbursement II	4
MBC-125	ICD-10 Coding I	2
MBC-126	CPT/HCPCS Coding I	4
		<b>Credits</b>
		<b>14</b>
<b>Summer Term</b>		
COMM-218Z	Interpersonal Communication	4
MBC-225	ICD-10, CPT and HCPCS Coding II	5
		<b>Credits</b>
		<b>9</b>
<b>Total Credits</b>		<b>37</b>

All courses must be passed with a C or better

## Careers

Career opportunities include:

- medical billing and/or coding

## Microelectronics Systems Technology, Certificate

**Program Code: CC.MICROSYSTECH**

This program prepares students for entry into the microelectronics and semiconductor industries. Course work focuses on wafer manufacturing, integrated circuit fabrication, component manufacturing, microelectronic assembly and equipment maintenance. Specific skill areas include: silicon materials fabrication, silicon manufacturing, semiconductor processing, microcontamination and particle control, troubleshooting of equipment and systems, microlithography, ion implantation, etch and chemical vapor deposition.

For information contact the Industrial Technology Department, 503-594-3318.

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-095 Algebra III
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3 credits - Recommended: PSY-101 Human Relations
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- communicate critical information about electronic systems using verbal, written, or graphical means;
- troubleshoot electrical and electronic systems;
- use proper electrical test equipment to test and maintain electronic and electrical components and equipment;
- demonstrate safe work habits around electricity and electronic equipment;
- demonstrate basic knowledge of semiconductor manufacturing and materials.

## Requirements

First Term		Credits
EET-112	Electronic Equipment and Assembly I	1
EET-137	Electrical Fundamentals I	4
EET-139	Principles of Troubleshooting I	2
EET-157	Digital Logic I	3
MTH-095	Algebra III	4
SM-150	Semiconductor Processing I	2
<b>Credits</b>		<b>16</b>
<b>Second Term</b>		
EET-113	Electronic Equipment and Assembly II	1
EET-141	Electrical Fundamentals II	4
IMT-120	Industrial Machinery I	3
MFG-107	Industrial Safety & First Aid	3
SM-160	Semiconductor Processing II	2
WR-101	Workplace Writing <sup>1</sup>	4
<b>Credits</b>		<b>17</b>
<b>Third Term</b>		
EET-114	Electronic Equipment and Assembly III	1
EET-142	Electrical Fundamentals III	4
IMT-223	Instrumentation & Controls	3
SM-170	Semiconductor Processing III	2
SM-280	Electronics & Microelectronics/CWE	2
Human Relations requirement (p. )		3

PSY-101	Human Relations (Recommended)	
	<b>Credits</b>	<b>15</b>
	<b>Total Credits</b>	<b>48</b>

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

## Careers

Career opportunities include:

- fabrication technician
- equipment technician
- product test technician

## Music Technology, Certificate

**Program Code: CC.MUSICTECH**

The Music Technology certificate gives students the core skills needed to enter the sound and music production industry.

For more information, contact Brian Rose, 503-594-3340 or [brianr@clackamas.edu](mailto:brianr@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- complete recording projects illustrating competence in professional audio recording technologies and the ability to complete the production process using appropriate software/hardware;
- complete recording projects that include elements of music and audio in digital format, including MIDI, sound sampling, synthesis, processing, editing, and mixing and display confidence in the use of associated software/hardware appropriate for these tasks in a professional setting;
- produce a final recording project that demonstrates preparedness for entry into a career related to music technology, and articulate how that project relates to professional opportunities in that field;
- critically analyze and discuss multimedia works (their own or others) in the context of music history and/or theory;
- demonstrate an awareness of ethical, legal, and business considerations involved when creating recorded audio works, including basic professional skills related to documentation and rights licensing for copyright, fair use, etc.

## Related Instruction Outcomes

### COMPUTATION

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher
- Use appropriate mathematics to solve problems.

## COMMUNICATION

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

## HUMAN RELATIONS

- 1 course - COMM-100Z Introduction to Communication or COMM-126 Introduction to Gender Communication or COMM-140 Introduction to Intercultural Communication or COMM-218Z Interpersonal Communication
- Engage in ethical communication processes that accomplish goals

## Requirements

Fall Term		Credits
MUS-107	Introduction to Audio Recording I	3
MUS-141	Introduction to the Music Business	3
MUS-142	Introduction to Electronic Music I: MIDI	3
WR-101 or WR-121Z	Workplace Writing or Composition I	4
Program Basics (p. 208)		3
Electives (p. 208)		2
<b>Credits</b>		<b>18</b>

Winter Term		Credits
Select one of the following:		4
COMM-100Z	Introduction to Communication	
COMM-126	Introduction to Gender Communication	
COMM-140	Introduction to Intercultural Communication	
COMM-218Z	Interpersonal Communication	
Select one of the following:		4-5
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
Higher Level Math or Statistics		
MUS-108	Introduction to Audio Recording II	3
MUS-140	Careers in Music	3
MUS-143	Introduction to Electronic Music II: Sequencing, Audio Looping, Sound EFX	3
Program Basics (p. 208)		3
Electives (p. 208)		2
<b>Credits</b>		<b>22-23</b>

Spring Term		Credits
MUS-109	Introduction to Audio Recording III	3
MUS-144	Introduction to Electronic Music III: Digital Audio	3
MUS-280	Music/CWE	2
Program Basics (p. 208)		3
Electives (p. 208)		2
<b>Credits</b>		<b>13</b>
<b>Total Credits</b>		<b>53-54</b>

## Program Basics

Code	Title	Credits
MUP-100	Individual Lessons: Non-Music Majors	1
MUS-101	Music Fundamentals	3
MUS-102	Music Fundamentals	3
MUS-103	Music Fundamentals	3
MUS-105	Music Appreciation	3
MUS-111	Music Theory I	3
MUS-112	Music Theory I	3
MUS-113	Music Theory I	3
MUS-131	Group Piano: Piano for Pleasure	1
MUS-132	Group Piano: Piano for Pleasure	1
MUS-133	Group Piano: Piano for Pleasure	1
MUS-134	Group Voice: Anyone Can Sing	1
MUS-135	Group Voice: Anyone Can Sing	1
MUS-136	Group Voice: Anyone Can Sing	1
MUS-137	Group Guitar I	1
MUS-138	Group Guitar II	1
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

## Electives

Code	Title	Credits
MUP-100	Individual Lessons: Non-Music Majors	1
MUP-102	Wind Ensemble	2
MUP-104	Pep Band/Combo-Improv	1
MUP-105	Jazz Ensemble	2
MUP-122	Chamber Choir	2
MUP-125	Vocal Jazz Ensemble: Mainstream	2
MUP-141	College Orchestra	1
MUP-150	Contemporary Music Ensemble	2
MUP-241	College Orchestra	1
MUS-101	Music Fundamentals	3
MUS-102	Music Fundamentals	3
MUS-103	Music Fundamentals	3
MUS-105	Music Appreciation	3
MUS-106	Audio Recording At Home	1
MUS-131	Group Piano: Piano for Pleasure	1
MUS-132	Group Piano: Piano for Pleasure	1
MUS-133	Group Piano: Piano for Pleasure	1
MUS-134	Group Voice: Anyone Can Sing	1
MUS-135	Group Voice: Anyone Can Sing	1
MUS-136	Group Voice: Anyone Can Sing	1
MUS-137	Group Guitar I	1
MUS-138	Group Guitar II	1
MUS-145	Introduction to Digital Sound, Video & Animation	3
MUS-147	Music, Sound & Moviemaking	1
MUS-148	Live Sound Engineering	3
MUS-149	Advanced Pro Tools Editing Techniques	1
MUS-160	Songwriting I	2
MUS-161	Songwriting II	2
MUS-170	Introduction to Scoring Music for Media	2

Code	Title	Credits
MUS-171	Sound Design	2
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-247	Sound for Media	3

## Careers

Career opportunities include:

- recording engineer
- live sound engineer
- media and sound post-production for internet companies
- sound/music for video games
- sound/media engineer for TV
- recording/sound for advertising production
- video post-production engineer
- sound engineer for radio
- video production engineer
- film sound recording engineer
- film post production for mixed media
- film post production for sound only
- film sound designer (FX)
- film foley artist
- technical support for music production software companies
- technical development for music production hardware and software
- sound technical development for software companies

## Occupational Skills Training, Certificate

**Program Code: CC.OCCSKILLSTRN**

The Occupational Skills Training program provides the opportunity for students to receive hands-on training in a specific occupational area. This program is designed for students who need or prefer work-based training to develop their skills. Students may begin their training at any time.

Students participate in supervised and structured work-based training in addition to classroom instruction. The program utilizes local businesses as training sites.

Individualized training plans are developed in consultation with the student, work-site trainer, CCC faculty and program coordinator.

For information contact Student Academic Support Services Department, 503-594-3475, or [www.clackamas.edu/advising](http://www.clackamas.edu/advising).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems.

## Communication

- 1 course - WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

## Human Relations

- 3 credits - See [Related Instruction](#) (p. ) for course list
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- complete an individualized training curriculum and employment plan, describing the skills and knowledge necessary to become competitively employable;
- demonstrate the ability to contact employers beyond what would ordinarily be available through an application process;
- demonstrate an increase in occupational skills through hands-on training provided by an employer and through general education and occupation-related classroom instruction.

## Requirements

Code	Title	Credits
MTH-050	Technical Mathematics I	4
OST-180	Occupational Skills Training/CWE	24
WR-101	Workplace Writing	4
Occupational related courses		15
<a href="#">Human Relations requirement</a> (p. )		3
<b>Total Credits</b>		<b>50</b>

## Careers

Career opportunities may be available in a variety of occupations, depending on the goals, skills and aptitude of the student and the availability of local training sites.

## Organic Farming, Certificate

**Program Code: CC.ORGANICFARM**

This certificate focuses on an ecological systems approach to sustainable farming principles and practices which are suitable for small-scale market farming. Many classes have a lab component, which provides students with the opportunity to gain a practical, working knowledge of small-scale, organic farming and marketing practices. Production methods for vegetables, grain, and fruit are covered.

Students may begin this program any term, although starting in Spring term to follow the annual crop planting, harvesting and planning cycle is recommended.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or [april.chastain@clackamas.edu](mailto:april.chastain@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II or higher
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 1 course - BA-285 Human Relations in Business or COMM-100Z Introduction to Communication
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- apply sustainable, organic methods in the planning, planting, management and harvesting of food crops;
- select and properly use farm equipment that is appropriate for a given scale and system of farming;
- implement organic IPM strategies in orchards and on small scale vegetable and berry farms;
- use a basic understanding of soil science and irrigation systems to make ecologically sound decisions in the production of food crops;
- write a business plan and identify the various regulations that impact an organic food producer;
- effectively communicate with co-workers and customers through speaking, writing and computer technology.

## Requirements

Fall Term		Credits
HOR-113	Organic Farming Practicum/Fall	3
HOR-124	Food Harvest	3
HOR-223	Applied Plant Science	4
Select one of the following		4-5
MTH-050	Technical Mathematics I	
MTH-065	Algebra II	
Higher Level Math or Statistics		
<a href="#">Electives</a> (p. 210)		2
<b>Credits</b>		<b>16-17</b>
Winter Term		
BA-285 or COMM-100Z	Human Relations in Business or Introduction to Communication	4
HOR-136	Organic Farming Practicum/Winter	3
HOR-216	Integrated Pest Management	3
HOR-230	Equipment Operation & Maintenance	2
<b>Credits</b>		<b>12</b>
Spring Term		
HOR-135	Propagation of Edible Plants	3

HOR-140	Soils	3
HOR-141	Organic Farming Practicum/Spring	4
<b>Electives (p. 210)</b>		3-4
<b>Credits</b>		<b>13-14</b>
<b>Summer Term</b>		
HOR-146	Fruit & Berry Growing	3
HOR-284	Organic Farming Practicum/Summer	3
HOR-285	Organic Farming/CWE	3
WR-101 or WR-121Z	Workplace Writing or Composition I	4
<b>Credits</b>		<b>13</b>
<b>Total Credits</b>		<b>54-56</b>

## Electives

Code	Title	Credits
BA-223	Principles of Marketing	4
BA-270	Social Media Marketing	4
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
HOR-237	Disease Identification	2
HOR-240	Irrigation Practices	3
HOR-246	Organic Farming and Gardening	2
HOR-250	Herb Growing and Gardening	1
HOR-251	Herbal Products	1
HOR-252	Kitchen Herbs	1

## Careers

Career opportunities include:

- operating your own farm
- working in the community food system
- running small-scale farms
- working closely with existing farmers
- advocating for local food systems
- working and managing community gardens, farmers markets, and school gardens

## Project Management, Certificate

**Program Code: CC.PROJECTMNGT**

This program is designed for students who are interested in upgrading their professional skills, those who want to learn new and valuable interpersonal skills and those who might be interested in pursuing the two-year [Project Management AAS \(p. 170\)](#).

For more information, contact Frank Corona, 503-594-6498, or [francisco.corona@clackamas.edu](mailto:francisco.corona@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- successfully employ common project management tools, such as a work breakdown structure, network diagram, risk assessment, and earned value management;
- demonstrate effective interpersonal communications, especially meeting and stakeholder management;
- list and explain key motivational, influence, and conflict management techniques;
- employ common software tools for project management;
- analyze scenarios to determine appropriate responses to ethical dilemmas within the context of a defined scenario, plan, execute, control, and close a project.

## Requirements

Fall Term		Credits
BA-120	Project Management Fundamentals	4
BA-125	Advanced Project Management Tools	5
<b>Credits</b>		<b>9</b>
Winter Term		Credits
BA-127	Project Management: Agile & Change Management	4
BA-128	Project Management: Leadership Strategies	4
<b>Credits</b>		<b>8</b>
Spring Term		Credits
BA-264	Project Management Tools	3
BA-268	Applied Project Demonstration	3
<b>Credits</b>		<b>6</b>
<b>Total Credits</b>		<b>23</b>

## Careers

Career opportunities include:

- career enhancement such as more marketable skills in one's current employment
- job opportunities in a project management training program

## Renewable Energy Technology, Certificate

**Program Code: CC.RNEWNRGYTECH**

The Renewable Energy Technology (RET) program provides technical training for employment in the field of manufacturing, installation and maintenance of renewable energy systems and products. Graduates will be prepared to integrate, install and make repairs related to equipment and controls. This program takes a broad-based approach to training renewable energy technicians, with emphasis on mechanical and electro-mechanical systems, fluid power, instrumentation and controls as well as systems troubleshooting. RET graduates will be prepared to work in the capacity of a technician with specialized skills in energy system measurement, energy efficiency, system design and electronic controls.

For information contact the Industrial Technology Department at 503-594-3318

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3 credits - See [Related Instruction \(p. \)](#) for course list
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- communicate effectively through technical drawings to determine product and customer specifications in building systems, energy products and thermal components;
- diagnose and repair electromechanical systems;
- design, install and troubleshoot electrical and fluid power controls related to energy system integration;
- analyze potential energy sources and select appropriate technologies;
- perform a residential energy audit, recommend and implement remediation measures;
- communicate the pros and cons of renewable energy technologies to a diverse user base.

## Requirements

First Term		Credits
EET-139	Principles of Troubleshooting I	2
IMT-104	Reading Schematics and Symbols	2
MFG-130	Basic Electricity I	3
MTH-050	Technical Mathematics I	4
RET-200	Renewable Energy Systems	2
Human Relations requirement (p. )		3
<b>Credits</b>		<b>16</b>
Second Term		Credits
IMT-120	Industrial Machinery I	3
MFG-109	Computer Literacy for Technicians	3
MFG-131	Basic Electricity II	3
MFG-221	Materials Science	3
MTH-080	Technical Mathematics II	3
RET-209	Renewable Energy I: Energy Efficiency	3
<b>Credits</b>		<b>18</b>
Third Term		Credits
IMT-220	Industrial Machinery II	3
MFG-107	Industrial Safety & First Aid	3
MFG-132	Basic Electricity III	3
RET-211	Renewable Energy II: System Fundamentals	3

WR-101 or WR-121Z	Workplace Writing or Composition I	4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>50</b>

## Careers

Career opportunities include:

- residential/commercial energy systems integrator
- energy audit and efficiency technician
- energy systems installer
- photo-voltaic (PV) manufacturing and industrial maintenance technician
- wind turbine technician
- limited renewable technician
- PV, geothermal and solar thermal technicians
- utilities and building trades

## Retail Management, Certificate

**Program Code: CC.RETAILMGT1Y**

This certificate is sponsored by members of the retail industry and is recommended for students currently working in retail sales positions or those students who would like to work in retail sales and progress into management roles and responsibilities. Course work is specific to the retail industry and focuses on preparing retail employees for upward mobility.

For information contact Beverly Forney, 503-594-3115 or [beverlyf@clackamas.edu](mailto:beverlyf@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- identify effective human relations and leadership strategies;
- communicate effectively using written documents, spreadsheets, and slide presentations;
- demonstrate an understanding of marketing concepts;
- analyze and evaluate the legal, procedural and ethical impacts of personnel management decisions;
- interpret and analyze financial information to make budget forecasts and analyses;
- evaluate retail management strategies to make sound decisions.

## Requirements

Fall Term		Credits
BA-131	Introduction to Business Computing	4
BA-206	Management Fundamentals	4
BA-223	Principles of Marketing	4
<b>Credits</b>		<b>12</b>
Winter Term		Credits
BA-214 or BA-205	Business Communications or Business Communications With Technology	3-4



BA-224	Human Resource Management	4
BA-285	Human Relations in Business	4
<b>Credits</b>		<b>11-12</b>
<b>Spring Term</b>		
BA-217	Budgeting for Managers	3
BA-249	Retailing	3
<b>Credits</b>		<b>6</b>
<b>Total Credits</b>		<b>29-30</b>

Most courses in this program can be applied to partially satisfy elective requirements in the [Business Management CC \(p. 181\)](#).

## Careers

Career opportunities include:

- retail clerks
- cashiers
- manager trainees
- sales associates
- other similar positions in all types of retail establishments

# Water & Environmental Technology, Certificate

**Program Code: CC.WATERENVIRONTECH**

The Water & Environmental Technology program provides career technical classes combined with field experience. Classes are offered in day/evening combinations and have enrollment limits to enhance instructional quality and job placement.

Course work emphasizes fundamental aspects of drinking water distribution, drinking water treatment, wastewater collection and wastewater treatment. Course work includes 240 hours of industry cooperative work experience, laboratory methods in environmental chemistry, aquatic microbiology and preparation for the provisional operator in training certification exams.

For information contact Matthew LaForce 503-594-3148 or [laforce@clackamas.edu](mailto:laforce@clackamas.edu).

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-082A Wastewater Math I, MTH-082B Waterworks Math I, MTH-082C Wastewater Math II, MTH-082D Waterworks Math II, or MTH-082E Math for High Purity Water
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3 credits - Recommended: PSY-101 Human Relations
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- successfully pass the state required level-1 certificate/ licensure exams for Oregon water treatment and water distribution;
- pass the Oregon Operator in Training certificate wastewater treatment and collection systems examinations;
- maintain and operate water and waste water treatment facilities and collection and water distribution systems;
- utilize mathematical skills to solve certification exam problems as well as situations experienced at water and waste water facilities;
- conduct and document scientific laboratory experiments as applied to the water and waste water industry and effectively communicate determined quantitative relationships using both graphs and equations;
- exhibit good teamwork skills and serve as effective members of laboratory and project teams;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication;
- communicate the importance of safety in operator daily activities and be good stewards of ethical and professionally work place interactions.

## Requirements

Fall Term		Credits
MTH-082A	Wastewater Math I	1
MTH-082B	Waterworks Math I	1
WET-110	Wastewater Operations I	3
WET-111	Waterworks Operations I	3
WET-112	Computer Applications for Water and Wastewater Operations	4
WR-101 or WR-121Z	Workplace Writing or Composition I	4
Human Relations requirement (p. )		3
PSY-101	Human Relations (Recommended)	
<b>Credits</b>		<b>19</b>

Winter Term		Credits
BI-204	Elementary Microbiology	4
MTH-082C	Wastewater Math II	1
MTH-082D	Waterworks Math II	1
WET-120	Wastewater Operations II	3
WET-121	Waterworks Operations II	3
WET-122	Water Distribution and Wastewater Collection Systems	3
WET-123	Environmental Chemistry I	3
<b>Credits</b>		<b>18</b>

Spring Term		Credits
WET-109	Backflow Assembly Operation and Testing	4
WET-130	Wastewater Operations III	4
WET-131	Water Treatment	4
WET-132	Collection & Distribution Lab	1
WET-134	Environmental Chemistry II	3

WET-180	Water & Environmental Projects I	5
	<b>Credits</b>	<b>21</b>
	<b>Total Credits</b>	<b>58</b>

## Careers

Career opportunities include:

- water and/or liquid waste treatment plant and system operator
- environmental science technician
- and environmental engineering technician
- environmental lab technician
- source control technician
- surface water specialist
- environmental regulator

## Welding Technology, Certificate

Program Code: CC.WELDINGTECH

This program prepares students for entry into these industries: fabricated structural metal products, motor vehicles and equipment, construction and heavy construction, transportation equipment, ship and boat building and repair, aircraft and parts, self-employment and miscellaneous fabricated metal products.

CCC's welding instructors are American Welding Society (AWS) certified professionals. The program's curriculum is based on the AWS national standard for entry level welders. Course work focuses on the knowledge and skills to perform:

- Fillet welds and groove welds using:
  - Shielded metal arc welding (SMAW)
  - Gas-metal arc welding (GMAW)
  - Flux-core arc welding (FCAW)
  - Gas-tungsten arc welding (GTAW)
  - Steel, stainless steel and aluminum
  - A variety of different electrodes;
- Plasma arc cutting (PAC), air carbon arc cutting (CAC-A) and gouging, manual and automatic oxy-fuel cutting (OFC and OFC-Track Burner) processes;
- Knowledge of materials science and welding theory;
- Print reading, inspection, quality, safety and shop practices;
- Fabrication techniques, including job cost calculations, layout, sketching, bills of material, fitting and cutting welding applied to real projects designed by industry partners.

## Short-term Training

For students who need a quick-entry strategy into the workforce, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information.

For information contact Dustin Bates, 503-594-3973, [dustinb@clackamas.edu](mailto:dustinb@clackamas.edu), or the Automotive and Welding Department, 503-594-3047

## Outcomes Related Instruction Outcomes Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems.

## Communication

- 1 course- WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

## Human Relations

- 3-4 credits - Recommended: COMM-100Z Introduction to Communication
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- work safely in an industrial environment around machinery, power tools, and chemicals;
- set-up, operate, and make adjustments to welding equipment as necessary to demonstrate quality workmanship that meets current American Welding Society (AWS) and industry standards;
- demonstrate the ability to set up and operate oxy fuel cutting equipment, carbon arc cutting and gouging and plasma cutting equipment safely and skillfully;
- apply basic knowledge of blueprint reading to fabricate projects as assigned;
- complete welding projects such as fillet welds and groove welds in all positions with Gas Metal Arc Welding (GMAW), Shielded Metal Arc Welding (SMAW), Flux Core Arc Welding (FCAW), and Gas Tungsten Arc Welding (GTAW) that will meet visual inspection criteria based on AWS codes and industry standards;
- perform advanced welding on materials such as stainless steel and aluminum with Gas Tungsten Arc Welding (GTAW);
- recognize and be able to repair common welding defects according to AWS and industry standards.

## Requirements

First Term		Credits
MTH-050	Technical Mathematics I <sup>1</sup>	4
WLD-100	Welder's Print Reading I	3
WLD-111	Shielded Metal Arc Welding (Stick)	8
or WLD-111A	or Shielded Metal Arc Welding (Stick)	
<b>and</b> WLD-111B	<b>and</b> Shielded Metal Arc Welding (Stick)	
<b>Credits</b>		<b>15</b>
Second Term		
MFG-103	Machining for Fabrication & Maintenance	3
WLD-113	Gas Metal Arc Welding/Flux Core Arc	8
or WLD-113A	Welding (Wirefeed)	
<b>and</b> WLD-113B	<b>or</b> Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed) <b>and</b> Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)	

WR-101	Workplace Writing <sup>1</sup>	4
<b>Credits</b>		<b>15</b>
<b>Third Term</b>		
WLD-110	Welder Certification	4
WLD-115 or WLD-115A <b>and</b> WLD-115B	Gas Tungsten Arc Welding (GTAW) or Gas Tungsten Arc Welding (GTAW) <b>and</b> Gas Tungsten Arc Welding (GTAW)	8
<b>Human Relations requirement (p. )</b>		3-4
COMM-100Z	Introduction to Communication (Recommended)	
<b>Credits</b>		<b>15-16</b>
<b>Total Credits</b>		<b>45-46</b>

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty or academic advisor for the transfer requirements of the specific advanced program or school.

## Careers

Career opportunities include:

- welding
- fabrication
- construction
- production welding
- sheet metal fabrication

## Wildland Fire Science, Certificate

**Program Code: CC.FSWILDLAND**

The Wildland Fire Science program provides training that can lead to seasonal employment in wildland firefighting or to the first step to a career in the forest industry or park service. There are many career tracks in the field of wildland firefighting and forestry. It's exciting work that requires fundamental survival, safety and firefighting training and skills. It is also important to be physically fit, work well in a team environment, and respond quickly and efficiently to instruction/commands.

Clackamas Community College is a certified training site recognized by the Pacific Northwest Wildfire Coordinating Group (PNWCG), the Oregon Department of Forestry, and National Forest Service. Program instructors are National Wildfire Coordinating Group (NWCG) certified and offer 15-30 years of wildland firefighting experience. Many of the courses carry NWCG certification as well as college credit.

For information contact Dan LoFaro, 503#594#3683 or [daniel.lofaro@clackamas.edu](mailto:daniel.lofaro@clackamas.edu), or visit [www.clackamas.edu/fire-science](http://www.clackamas.edu/fire-science)

## Outcomes

### Related Instruction Outcomes

#### Computation

- 1 course - MTH-050 Technical Mathematics I or MTH-065 Algebra II
- Use appropriate mathematics to solve problems.

#### Communication

- 1 course - WR-101 Workplace Writing or WR-121Z Composition I
- Read actively, think critically, and write purposefully and capably for professional audiences.

#### Human Relations

- 3-4 credits - See **Related Instruction (p. )** for course list
- Engage in ethical communication processes that accomplish goals.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- evaluate hazards in the wilderness, forest, and fire environments and take appropriate actions to ensure personal safety;
- design a plan appropriate to the fire or incident situation;
- demonstrate safe operation of firefighting tools and equipment;
- execute the plan based on the appropriate strategy, tactics, and incident objectives;
- successfully lead, supervise, and direct personnel at the appropriate level of organization.

## Requirements

<b>First Term</b>		<b>Credits</b>
FRP-101	Basic Forest Management	3
FRP-102	Basic Forest Management Lab	1
FRP-130	Introduction to Wildland Firefighting (S-130/S-190/ICS-100/IS-700/L-180)	2
FRP-243	Wilderness I: Psychology of Survival	3
GIS-101	Principles of Geospatial Technology	2
WR-101 or WR-121Z	Workplace Writing or Composition I	4
<b>Credits</b>		<b>15</b>
<b>Second Term</b>		
FRP-211	Portable Pumps and Water Use (S-211)	2
FRP-244	Wilderness II: Basic Land Navigation (S-244)	3
FRP-245	Wilderness III: Weather of the Northwest	2
FRP-246	Wilderness IV: Backcountry CPR/First Aid/ AED	2
MTH-050 or MTH-065	Technical Mathematics I or Algebra II	4
<b>Electives (p. 215)</b>		2-3
<b>Credits</b>		<b>15-16</b>
<b>Third Term</b>		
BI-103	General Biology; Plants & The Ecosystem	4
FRP-110	Basic Wildland Fire Investigation (FI-110)	1
FRP-131	Advanced Firefighter Training (S-131/ S-133)	1
FRP-205	Forest Management Assessments and Inventories	3
FRP-249	Followership to Leadership (L-280)	2
FRP-250	Wilderness VI: Basic Tool Use and Care	1
FRP-270	Basic Air Operations (S-270)	1

Human Relations requirement (p. )	3-4
<b>Credits</b>	<b>16-17</b>
<b>Total Credits</b>	<b>46-48</b>

## Electives

Any EMT (p. 277), FRP (p. 282), GEO (p. 288), or GIS (p. 287) course not included in the program.

## Careers

Career opportunities include:

- wildland firefighter
- forest and conservation technician
- forest fire inspector or investigator
- forest fire prevention specialist
- independent firefighting contractor
- employment in the timber industry

# CAREER PATHWAY CERTIFICATES (CPCC)

Career Pathway Certificate of Completion (CPCC) programs are designed to acknowledge proficiency in a particular technical skill grouping with occupational program outcomes.

## Requirements

- Establish a cumulative 2.0 GPA at CCC
- Establish residency by earning a minimum of 25% of the credits at CCC
- See [Degree and Certificate Information & Requirements \(p. 38\)](#) for additional general requirements for all degrees and certificates
- Specific discipline requirements are listed on each program page

## Alcohol & Drug Counselor, Career Pathway Certificate

**Program Code: CC.ALDRUGCOUNSLR**

The Alcohol & Drug Counselor Pathway Certificate prepares students to sit for the certification examination offered by the Mental Health and Addiction Certification Board of Oregon. The coursework is appropriate both for new students to the field, and those wishing to update their skills or seek additional certification. The certificate provides the 150 educational hours required by the certification board. Degree-seeking students can also opt to add a CWE component that will partially fulfill the 1000 required practicum hours. Qualifying for the CADC I certificate is a stepping stone for students who want to work now, but may also be thinking of pursuing further education in the future. More information about certification can be found at [www.mhacbo.org](http://www.mhacbo.org)

For information contact Yvonne Smith, 503-594-3207 or [yvannes@clackamas.edu](mailto:yvannes@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate appropriate interviewing skills in an assessment or treatment setting;
- articulate the ethics required for effective work in the substance use field;
- recognize the signs of common substance use disorders;
- discuss the impact of drug use and misuse on society and the public health.

## Requirements

Code	Title	Credits
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HE-164	Body & Drugs II: Alcohol	3
HS-103	Ethics for Human Service Workers	2
HS-104	Using Diagnostic Criteria in Addiction Treatment	1
HS-156	Conducting Human Service Interviews	3
HS-211	Infectious Diseases and Harm Reduction	1

Code	Title	Credits
HS-216	Group Counseling Skills	3
<b>Total Credits</b>		<b>16</b>

## Careers

Career opportunities include:

- inpatient treatment programs
- outpatient treatment programs
- programs for those experiencing homelessness
- variety of community agencies

## Auto Body/Collision Repair and Refinishing Technology, Career Pathway Certificate

**Program Code: CC.ABCOLRRTECH**

The Auto Body/Collision Repair Refinishing Technology program simulates real working conditions in a well-equipped modern shop facility. Training combines intensive theory and practical lab experience tailored to specific needs. In order to complete the program in three consecutive terms, students must start fall term.

Technicians repair or replace parts, straighten frames and Unibody structure, install and adjust components and glass, repair electrical systems, restraints, suspension components, brakes, prepare all types of surfaces for necessary refinishing operations, mix and apply modern waterborne and solvent-borne paint products, and finish their work to industry standards. Skills learned include welding, metal straightening, filler use, plastic repair, surface preparation, masking, product selection, mixing, color matching and application techniques, as well as detailing and troubleshooting. This certificate qualifies students to apply for I-CAR Pro Level 1 Certification.

For information contact Dustin Bates, 503-594-3973 or [dustinb@clackamas.edu](mailto:dustinb@clackamas.edu), or the Automotive and Welding Department, 503-594-3047.

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate the proper selection of tools and materials needed to perform metal straightening and plastic filler repair processes;
- prepare a repaired surface, choose and apply appropriate materials, block sand, clean surface, and apply topcoat, detail;
- repair sheet metal damage, demonstrate panel replacement techniques, identify structural damage, and formulate viable repair processes;
- perform spot repairs and blends using the latest industry accepted practices and materials, to the standards of industry;
- demonstrate skill in major body repair, including frame and Unibody repair;
- perform a variety of welding processes needed to properly repair vehicles of both steel and aluminum construction, in accordance with I-CAR guidelines;

- demonstrate competency in Collision Repair Estimating, using Mitchells guides, and Audatex, and CCC-ONE software.

## Requirements

First Term		Credits
AB-112	Collision Repair Welding I	2
AB-113	Collision Repair I/Nonstructural	6
AB-149	Collision Repair Estimating I	2
ABR-125	Collision Repair/Refinishing I	6
<b>Credits</b>		<b>16</b>
Second Term		Credits
AB-123	Collision Repair Welding II	2
AB-133	Collision Repair II/Structural	6
AB-150	Collision Repair Computerized Estimating - Audatex	2
ABR-127	Collision Repair/Refinishing II	6
<b>Credits</b>		<b>16</b>
Third Term		Credits
AB-222	Collision Repair III/Advanced Structural	6
ABR-129	Collision Repair/Refinishing III	6
<b>Credits</b>		<b>12</b>
<b>Total Credits</b>		<b>44</b>

## Careers

Career opportunities include:

- prepper
- masker
- painter's helper
- body technician at independent, dealership, or fleet repair facilities in any transportation-related field:
  - automotive
  - trucking
  - transit
  - light rail
  - aircraft
  - recreational vehicle
  - industrial
  - marine

## CNC Operator, Career Pathway Certificate

**Program Code: CC.CNCOPERATOR**

This program provides the training necessary for employment within the advanced manufacturing field. The program is arranged with core CNC competencies in mind while allowing the student flexibility to take other relevant manufacturing courses. Course work covers blueprint reading, technical mathematics, safety, and manual and CNC machining. The program is fully transferable to the [Machine Tool Technology Certificate \(p. 202\)](#) or [Machine Tool Technology AAS \(p. 162\)](#).

This certificate prepares students for a wide variety of manufacturing careers and opportunities to continue at a four-year institution.

For more information, contact the Industrial Technology Department, 503-594-3318.

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- accurately interpret technical drawings to determine key inspection dimensions and specifications;
- work safely in an industrial environment around machinery, power tools and chemicals;
- operate manual machine tools to produce simple products to required specifications;
- operate CNC machine tools including: program try-out, tooling/work-piece setup and adjustment of three-axis lathes;
- apply mathematics to solve manufacturing problems in machining and inspection.

## Requirements

Code	Title	Credits
MFG-104	Print Reading	3
MFG-107	Industrial Safety & First Aid	3
MTH-050	Technical Mathematics I <sup>1</sup>	4
MTT-111	Manual Machining I	4
MTT-121	CNC I: Set-Up and Operation	4
<b>Total Credits</b>		<b>18</b>

<sup>1</sup> Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

## Careers

Career opportunities include:

- entry-level CNC operator
- machinist
- general manufacturing technician

## Energy Systems Maintenance Technician, Career Pathway Certificate

**Program Code: CC.ENSYSMAINTECH**

The Energy Systems Maintenance Technician certificate provides students with the basic technical skills and principles to support manufacturing, installation and maintenance, and electronics and communication engineers related to renewable energy.

For information contact the Industrial Technology Department at 503-594-3318.



## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- communicate effectively through technical drawings to determine product and customer specifications in building systems, energy products and thermal components;
- diagnose and repair electromechanical systems;
- design, install and troubleshoot electrical and fluid power controls related to energy system integration;
- analyze potential energy sources and select appropriate technologies;
- perform a residential energy audit, recommend and implement remediation measures;
- communicate the pros and cons of renewable energy technologies to a diverse user base.

## Requirements

Code	Title	Credits
EET-139	Principles of Troubleshooting I	2
IMT-104	Reading Schematics and Symbols	2
MFG-107	Industrial Safety & First Aid	3
MFG-130	Basic Electricity I	3
MTH-050	Technical Mathematics I	4
RET-200	Renewable Energy Systems	2
<b>Electives (p. 218)</b>		<b>6</b>
<b>Total Credits</b>		<b>22</b>

## Electives

Code	Title	Credits
IMT-120	Industrial Machinery I	3
MFG-103	Machining for Fabrication & Maintenance	3
MFG-140	Principles of Fluid Power	3
RET-209	Renewable Energy I: Energy Efficiency	3

## Careers

Career opportunities include:

- employment in the field of manufacturing
- installation and maintenance of renewable energy production

## Entry Level Journalist, Career Pathway Certificate

Program Code: CC.ELVLJRNLSLST

The Entry Level Journalist certificate prepares students for entry-level positions in the field of digital media and journalism. Students attain knowledge and learn skills to seek careers in creative and support professions related to digital media and broadcast journalism, such as visual and audio editing, digital media production, post production, weblog and podcast writing and production, broadcast reporting, and electronic newsgathering.

For information contact Melissa Jones, 503-594-3261 or [melissaj@clackamas.edu](mailto:melissaj@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- display preparedness for an entry-level position in the field of journalism by orchestrating multiple news teams, generating newsworthy story ideas, and checking content for problem with libel and newsworthiness;
- demonstrate video production skills and understanding in broadcast journalism by managing a news crew to follow up and record video news stories, editing video news stories, compressing video into needed formats, uploading and updating video news stories onto an internet server;
- demonstrate skills and understanding in journalism by writing news stories and taking photographs for publication in the weekly newspaper, working with a peer group toward a common goal, conducting interviews in a professional manner, synthesizing information gathered from sources to put together news articles, writing photo captions with no errors, researching, collecting and evaluating information for use in news stories, practicing ethical journalism in gathering information, and processing advertising contracts;
- demonstrate skills and understanding in digital video editing which include logging and capturing raw video, cutting video sequences into individual shots, assembling shots into cohesive and meaningful order within a timeline, generating text to place into video, adjusting audio levels and apply audio transitions and color correction, discuss the historical cultural impact of the language of film and how that impacts present-day editing decisions, apply established editing techniques and style to a creative video editing project using Premiere Pro, create a digital slideshow, produce an audio news story, design and maintain a working news website.

## Requirements

Fall Term		Credits
DMC-100	Introduction to Media Arts	3
DMC-104	Digital Video Editing	4
J-220	Podcasting and Video Journalism	4
WR-121Z	Composition I	4
<b>Credits</b>		<b>15</b>
Winter Term		Credits
COMM-100Z or PSY-101	Introduction to Communication or Human Relations	3-4
J-215	College News: Writing & Photography	4
J-216	Writing for Media	4
DMC-291	Digital Media Communications Portfolio Project I	4
<b>Credits</b>		<b>15-16</b>
Spring Term		Credits
J-134	Photojournalism	4
J-211	Mass Media & Society	4

J-226	Introduction to College News: Design & Production	4
<b>Credits</b>		<b>12</b>
<b>Total Credits</b>		<b>42-43</b>

## Careers

Career opportunities include:

- radio
- television stations
- motion picture industry
- advertising
- promotions

## Entry Level Welder, Career Pathway Certificate

**Program Code: CC.ENTRYWLDTECH**

This program is designed with core competencies in mind while allowing the student flexibility to take other relevant welding courses.

For information contact Dustin Bates, 503-594-3973 or [dustinb@clackamas.edu](mailto:dustinb@clackamas.edu), or the Automotive and Welding Department, 503-594-3047

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- work safely in an industrial environment around machinery, power tools, and chemicals;
- set up, operate, and make adjustments to welding equipment as necessary to demonstrate quality workmanship that meets current American Welding Society (AWS) and industry standards;
- apply basic knowledge of blueprint reading to fabricate projects as assigned.

## Requirements

First Term		Credits
WLD-100	Welder's Print Reading I	3
Select one of the following:		8
WLD-111 or WLD-111A <b>and</b> WLD-111B	Shielded Metal Arc Welding (Stick) or Shielded Metal Arc Welding (Stick) <b>and</b> Shielded Metal Arc Welding (Stick)	
WLD-113 or WLD-113A <b>and</b> WLD-113B	Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed) or Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed) <b>and</b> Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)	

WLD-115 or WLD-115A <b>and</b> WLD-115B	Gas Tungsten Arc Welding (GTAW) or Gas Tungsten Arc Welding (GTAW) <b>and</b> Gas Tungsten Arc Welding (GTAW)	
<b>Credits</b>		<b>11</b>

### Second Term

Select one of the following: 8

WLD-111 or WLD-111A <b>and</b> WLD-111B	Shielded Metal Arc Welding (Stick) or Shielded Metal Arc Welding (Stick) <b>and</b> Shielded Metal Arc Welding (Stick)	
WLD-113 or WLD-113A <b>and</b> WLD-113B	Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed) or Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed) <b>and</b> Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)	
WLD-115 or WLD-115A <b>and</b> WLD-115B	Gas Tungsten Arc Welding (GTAW) or Gas Tungsten Arc Welding (GTAW) <b>and</b> Gas Tungsten Arc Welding (GTAW)	
WLD-250	Welding Fabrication I Beginning Project	4
<b>Credits</b>		<b>12</b>
<b>Total Credits</b>		<b>23</b>

No course may be used to satisfy more than one requirement

## Careers

Career opportunities include:

- blueprint reading and fitting
- tacking
- production welding
- repair welding
- fabrication

## Gerontology for Health Care Professionals, Career Pathway Certificate

**Program Code: CC.GERHLCAREPRO**

The need for nurses to be better prepared for caring for our aging population has been highlighted by the National League for Nursing (NLN) 2012, The Hartford Center for Geriatric Nursing (1996), The Institute of Medicine (IOM) 2012, Healthy People 20-20 and myriad other nursing organizations. Currently, the Oregon Consortium for Nursing Education (OCNE) requires students receive Older Adult content in NRS-110 Foundations of Nursing - Health Promotion, and then the assumption is that as the curricula address the lifespan of an individual, that more gerontology content is included throughout the program. Although this may be the case, it is up to each individual college and then each individual instructor to determine when and how much gerontology content to include. This career pathway certificate will address the need for students in nursing and other health sciences programs (such

as [Medical Assistant](#) (p. 204), and [Emergency Medical Technology](#) (p. 190)) to have the background and knowledge to work with the aging population.

For information, contact Yvonne Smith, 503-594-3207 or [yvones@clackamas.edu](mailto:yvones@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply current theories in gerontology to their field of practice;
- apply gerontological concepts to practice settings working with older adults;
- differentiate between normal aging and disease processes associated with aging, especially chronic illness and dementia;
- provide support to older adults grieving a loss (including the death of a loved one) by utilizing knowledge and skills of grief and bereavement;
- discuss the impact of aging on patient care in the allied health fields.

## Requirements

Code	Title	Credits
GRN-181	Issues in Aging	3
GRN-182	Aging and the Body	3
GRN-183	Death and Dying	3
GRN-184	Aging & the Individual	3
<b>Electives</b> (p. 220)		3-5
<b>Total Credits</b>		<b>15-17</b>

## Electives

Code	Title	Credits
FYE-101	First Year Experience Level I	2
GRN-165	Life Enrichment With Older Adults	3
GRN-290	Special Topics in Gerontology	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HS-154	Community Resources	3
HS-156	Conducting Human Service Interviews	3

## Human Resource Management Essentials, Career Pathway Certificate

**Program Code:** CC.HRMESENTIALS

This program is designed for students who either are currently employed in or desire to be employed in Human Resource Management (HRM), and who lack formal education in Human Resource Management laws and processes. The classes provided in this pathway certificate form the foundation for work as a Human Resource Manager or for future education in the discipline.

For information call Michael Moiso, 503-594-3770 or [mmoiso@clackamas.edu](mailto:mmoiso@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- describe the impacts of major laws and Supreme Court decisions affecting Human Resource Managers,
- describe disparate treatment and adverse impact, and explain the Uniform Guidelines related to national origin, religion, and other discrimination;
- assist in conducting job analyses;
- assist in recruitment and selection processes, and advise hiring supervisors regarding legal and ethical issues;
- assist in implementing and maintaining Human Resource Management processes, including Training and Development and Performance Management;
- describe issues related to financial equity and direct and indirect financial compensation;
- apply reflective thinking and self-management in professional settings.

## Requirements

Code	Title	Credits
BA-224	Human Resource Management	4
BA-229	Employment Law	4
BA-254	Basic Compensation & Benefits	4
BA-285	Human Relations in Business	4
<b>Total Credits</b>		<b>16</b>

Courses in this program can be applied to satisfy requirements in the [Human Resource Management Certificate](#) (p. 196).

## Careers

Career opportunities include:

- human resource specialists
- human resource generalists
- human resource assistants

## Integrated Marketing & Promotion, Career Pathway Certificate

**Program Code:** CC.INTMARKPRO

Students who successfully complete this pathway will be prepared to develop integrated marketing and promotional strategies within the current business environment. Skills developed in this pathway should enhance effectiveness of the marketing and promotional functions for small business owners and develop practical marketing and promotion skills for employees working within the marketing function.

For information contact Beverly Forney, 503-594-3115 or [beverlyf@clackamas.edu](mailto:beverlyf@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate a conceptual understanding of the strategic organization through the integration of the functional areas of business into a comprehensive marketing plan;
- develop a marketing plan;
- develop a promotional plan;
- prepare and deliver effective presentations.

## Requirements

Code	Title	Credits
BA-223	Principles of Marketing	4
BA-238	Sales	4
BA-239	Advertising	4
BA-261	Consumer Behavior	4
BA-270	Social Media Marketing	4
<b>Total Credits</b>		<b>20</b>

Courses in this program can be applied to satisfy requirements in the [Marketing Certificate](#) (p. 202).

## Irrigation Technician, Career Pathway Certificate

**Program Code:** CC.IRRTECHNICIAN

The Irrigation Technician program provides instruction for design, installation, repair, upgrade, maintenance, monitoring and programming of irrigation systems for landscapes, nurseries, golf courses, parks, or agriculture. This pathway certificate is a part of the [Horticulture AAS](#) (p. 152). Classes also count toward the [Landscape Management AAS](#) (p. 159).

Students in this program also take WET-109 Backflow Assembly Operation and Testing, which prepares them to become certified as a Backflow Assembly Tester.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or [april.chastain@clackamas.edu](mailto:april.chastain@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- design, install, maintain, troubleshoot, repair and program irrigation systems.

## Requirements

Winter Term		Credits
HOR-231	Irrigation Design	3
WET-109	Backflow Assembly Operation and Testing	4
<b>Credits</b>		<b>7</b>
Spring Term		
HOR-140	Soils	3

HOR-240	Irrigation Practices	3
HOR-280 or HOR-282	Horticulture/CWE or Horticulture/CWE	3
<b>Credits</b>		<b>9</b>
<b>Total Credits</b>		<b>16</b>

## Careers

Career opportunities include:

- Irrigation Technician in:
  - nurseries
  - greenhouses
  - parks
  - golf courses
  - landscapes
  - production agriculture

## Limited License Electrician Apprenticeship Technologies, Career Pathway Certificate

**Program Codes:** CC.LIMITLICENSEA, CC.LIMITLICENSEB

**Trades:** Limited Energy, Protective Signaling

**4000-6000 BOLI-ATD Trades**

Registered Apprenticeship in the electrician trades or occupations is a method of career and technical related training leading to certification and journey-level status.

This is a limited-entry program for registered apprentices who are sponsored by individual employers, accepted by a Joint Apprenticeship and Training Committee (JATC) and registered with the State of Oregon Bureau of Labor & Industries (BOLI).

Clackamas Community College offers three state-wide Apprenticeship degrees and their stackable Certificates of Completion and Career Pathway Certificates of Completion. These parent degrees are: [Electrician Apprenticeship Technologies AAS](#) (p. 147), [Construction Trades General Apprenticeship AAS](#) (p. 137), and [Industrial Mechanics and Maintenance Technology Apprenticeship AAS](#) (p. 158). These degrees do not guarantee licensure.

This is a stackable Career Pathway Certificate for the [Electrician Apprenticeship Technologies AAS](#) (p. 147).

This program is articulated with Oregon Institute of Technology (OIT), which requires a higher-level math course than is required for the program. Contact an Apprenticeship Advisor at CCC for help with transfer to OIT.

Electricians and plumbers require state licensure. Related training courses meet industry standards and are offered through a partnership between the Oregon State Apprenticeship & Training Council and the local Joint Apprenticeship & Training Committee.

For more information on CCC's apprenticeship programs, visit the [Apprenticeship webpage](#), or contact an Apprenticeship Advisor at 503-594-0959, or [apprenticeship.advising@clackamas.edu](mailto:apprenticeship.advising@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

#### Electrical Fundamentals/Safety

- solve mathematical formulas and equations of theory;
- describe and apply basic theory of electrical sources;
- demonstrate safe working practices in accordance with state and federal regulations.

#### Mathematics/Measurement/Calculations and Equipment

- calculate voltage drop;
- solve electrical equations using trade specific mathematical formulas;
- use test equipment to make electrical measurements;
- use and care of trade specific equipment appropriately.

#### Assessment and Troubleshooting

- operate PLC's according to trade specific applications and methodology;
- describe various troubleshooting techniques of trade specific equipment;
- draw and interpret blueprints and schematics.

#### Electrical Code and Exam Preparation

- interpret NEC and Oregon Specialty Codes;
- prepare for state exam;
- complete and pass timed practice exams;
- demonstrate knowledge of industry terminology;
- use the NEC articles and tables to perform various calculations;
- utilize the Oregon Administrative Rules (OAEs) in relation to the NEC and Oregon Specialty Codes (OSC);
- complete the NEC code preparation exams with a 75% and higher.

## Requirements

### License A Limited Energy and Protective Signaling

Code	Title	Credits
APR-111LE	Residential Technologies	4
APR-112LE	Basic Trade, Code & Safety	4
APR-113LE	Specialized Control Systems	4
APR-114LE	Data Communications	4
APR-115LE	Amplified Systems	4
APR-116LE	Security Systems	4
APR-217LE	Integrated Systems	4
APR-218LE	Fire Alarm Systems	4
APR-219LE	ADA & Code	4
<b>Total Credits</b>		<b>36</b>

### License B Limited Energy

Code	Title	Credits
APR-111LE	Residential Technologies	4
APR-112LE	Basic Trade, Code & Safety	4

Code	Title	Credits
APR-113LE	Specialized Control Systems	4
APR-114LE	Data Communications	4
APR-115LE	Amplified Systems	4
APR-219LE	ADA & Code	4
<b>Total Credits</b>		<b>24</b>

## Careers

4000 Hour BOLI-ATD Trades:

- Limited Energy Technician License B<sup>1</sup>
- Limited Maintenance Electrician
- Limited Renewable Energy Technician
- Limited Residential Electrician

6000 Hours BOLI-ATD Trades:

- Limited Energy Technician License A<sup>1</sup>
- Sign Maker/Fabricator

<sup>1</sup> Programs offered at Clackamas Community College through partnership with local JATC or IEC.

## Management Fundamentals, Career Pathway Certificate

**Program Code: CC.MGMTFUND**

This program is designed for students who seek a foundation of managerial knowledge to support their advancement toward a career in management.

For information contact Sharon Parker, 503-594-3075 or [sharonp@clackamas.edu](mailto:sharonp@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- demonstrate the ability to communicate effectively;
- identify the various laws that impact employee management practices;
- identify effective supervisory strategies (e.g. motivation, goal setting, coaching, leadership, etc.) for given individual and group situations.

## Requirements

Code	Title	Credits
BA-217	Budgeting for Managers	3
BA-224	Human Resource Management	4
BA-251	Supervisory Management	3
BA-285	Human Relations in Business	4
WR-121Z	Composition I	4
<b>Total Credits</b>		<b>18</b>

All courses in this program can be applied to satisfy requirements in the **Business Management Certificate** (p. 181).

## Careers

Career opportunities include:

- frontline or entry-level supervisory positions in retail, manufacturing, sales, and service industries

## Manual Apprenticeship Trades, Career Pathway Certificate

Program Code: CC.MANUALPATHWAY

Trades: Painters

6000 BOLI-ATD Trades

Registered Apprenticeship in the construction trades or occupations is a method of career and technical related training leading to certification and journey-level status.

This is a limited-entry program for registered apprentices who are sponsored by individual employers, accepted by a Joint Apprenticeship and Training Committee (JATC) and registered with the State of Oregon Bureau of Labor & Industries (BOLI).

Clackamas Community College offers three state-wide Apprenticeship degrees and their stackable Certificates of Completion and Career Pathway Certificates of Completion. These parent degrees are: [Electrician Apprenticeship Technologies AAS \(p. 147\)](#), [Construction Trades General Apprenticeship AAS \(p. 137\)](#), and [Industrial Mechanics and Maintenance Technology Apprenticeship AAS \(p. 158\)](#). These degrees do not guarantee licensure.

This is a stackable Career Pathway Certificate for the [Construction Trades General Apprenticeship AAS \(p. 137\)](#).

This program is articulated with Oregon Institute of Technology (OIT), which requires a higher-level math course than is required for the program. Contact an Apprenticeship Advisor at CCC for help with transfer to OIT.

For more information on CCC's apprenticeship programs, visit the [Apprenticeship webpage](#), or contact an Apprenticeship Advisor at 503-594-0959, or [apprenticeship.advising@clackamas.edu](mailto:apprenticeship.advising@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

#### Building Fundamentals/Safety

- demonstrate safe working practices including rigging and lock out tag out in accordance with state and federal regulations;
- apply OSHA practices in relation to the specific trade;
- apply theory as it relates to trade competencies;
- utilize recognized standard building code guidelines as applicable.

#### Mathematics/Measurement/Calculations and Equipment

- calculate elementary algebraic equations and formulas;
- apply appropriate formulas to mathematical situations;
- demonstrate the proper care, use, and storage of hand and power tools.

## Blueprint and Schematics

- read and interpret building plans and drawings

## Requirements

Code	Title	Credits
APR-119PT	Basic Trade & Safety	2
APR-129PT	Basic Surface & Preparation	2
APR-139PT	Hand & Mechanical Cleaning	2
APR-149PT	Basic Applications	2
APR-159PT	Basic Covering & Problem Solving	2
APR-169PT	Advanced Coating	2
APR-219PT	Advanced Graphics & Texturing	2
APR-229PT	Advanced Techniques	2
APR-239PT	Advanced Estimating & Codes	2
<b>Total Credits</b>		<b>18</b>

## Careers

- Asbestos Removal
- Carpenter
- HVAC/R
- Interior/Exterior Finisher
- Painter<sup>1</sup>
- Pile Driver
- Plumber
- Scaffold Erector
- Sheet Metal

<sup>1</sup> Programs offered at Clackamas Community College through partnership with local JATC.

## Mechanics and Maintenance Apprenticeship Technologies: Trade Worker Apprenticeship Technologies, Career Pathway Certificate

Program Code: CC.MACHINIST

Trades: Machinist

6000 BOLI-ATD Trades

Registered Apprenticeship in the machinist trades or occupations is a method of career and technical related training leading to certification and journey-level status.

This is a limited-entry program for registered apprentices who are sponsored by individual employers, accepted by a Joint Apprenticeship and Training Committee (JATC) or NW Willamette Trades Apprenticeship and Training Committee (TATC) and registered with the State of Oregon Bureau of Labor & Industries (BOLI).

Clackamas Community College offers three state-wide Apprenticeship degrees and their stackable Certificates of Completion and Career Pathway Certificates of Completion. These parent degrees are: [Electrician Apprenticeship Technologies AAS \(p. 147\)](#), [Construction Trades General](#)



Apprenticeship AAS (p. 137), and Industrial Mechanics and Maintenance Technology Apprenticeship AAS (p. 158). These degrees do not guarantee licensure.

This is a stackable Career Pathway Certificate for the Industrial Mechanics and Maintenance Technology Apprenticeship AAS (p. 158).

This program is articulated with Oregon Institute of Technology (OIT), which requires a higher-level math course than is required for the program. Contact an Apprenticeship Advisor at CCC for help with transfer to OIT.

For more information on CCC's apprenticeship programs, visit the [Apprenticeship webpage](#), or contact an Apprenticeship Advisor at 503-594-0959, or [apprenticeship.advising@clackamas.edu](mailto:apprenticeship.advising@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

#### Machinery Operation and Maintenance

- demonstrate the functions of trade-specific industrial systems;
- define lubrication processes with trade-specific industrial materials and equipment;
- identify mechanical and/or electrical industrial systems;
- demonstrate the proper care, use and storage of hand and power tools;
- develop machine shops skills in troubleshooting.

#### Fabrication

- read and interpret trade-specific industrial blueprints;
- perform trade-specific welding applications;
- analyze the properties of materials and how they apply to trade-specific fabricating applications;
- fabricate industrial materials in appropriate trade-specific applications.

#### Mathematics of the Trade

- calculate elementary algebraic equations and formulas;
- apply appropriate formulas to mathematical situations.

#### Safety

- demonstrate safe working practices in accordance with state and federal regulations;
- apply standardized OSHA practices to specific trade applications;
- describe procedures for proper removal and disposal of hazardous materials.

## Requirements

Code	Title	Credits
APR-104MA	Print Reading	3
APR-106MA	Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing	3
APR-111MA	Manual Machining I	4
APR-112MA	Manual Machining II	4
APR-201MA	CNC I: Set-Up and Operation	4
APR-202MA	CNC II: Programming and Operation	4

Code	Title	Credits
MTH-080	Technical Mathematics II	3
<b>Total Credits</b>		<b>25</b>

## Careers

6000 Hours BOLI-ATD Trades:

- Machinist<sup>1</sup>
- Programmable Logic Controller
- Industrial Mobile Mechanic

<sup>1</sup> Programs offered at Clackamas Community College through NW Willamette TATC

## Nursing Assistant - Gerontology Specialist, Career Pathway Certificate

Program Code: CC.NAGERONSPEC

This program combines the nursing assistant clinical training with the applicable theory aimed at serving our aging population. This certificate will ultimately lead to an advanced workforce for employers and more robust employment opportunities for students.

For information, contact Yvonne Smith, 503-594-3207 or [yvones@clackamas.edu](mailto:yvones@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- apply gerontological concepts to practice settings working with older adults;
- differentiate between normal aging and disease processes associated with aging, especially chronic illness and dementia;
- provide support to older adults grieving a loss (including the death of a loved one) by utilizing knowledge and skills of grief and bereavement.

## Requirements

Code	Title	Credits
GRN-181	Issues in Aging	3
GRN-182	Aging and the Body	3
GRN-183	Death and Dying	3
GRN-184	Aging & the Individual	3
NUR-100	Nursing Assistant I	6.5
NUR-100C	Nursing Assistant I Clinical	0
<b>Total Credits</b>		<b>18.5</b>

## Plant Health Management, Career Pathway Certificate

Program Code: CC.PLANTHEALMGT

The Plant Health Management program provides instruction for monitoring and identifying pests, selecting and utilizing appropriate control measures, and evaluating their effectiveness. Course work is offered mainly through evening classes and on-the-job training. This pathway certificate is a part of the [Horticulture AAS \(p. 152\)](#). Classes also count toward the [Landscape Management AAS \(p. 159\)](#) and the [Landscape Management AAS, Arboriculture Option \(p. 161\)](#).

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or [april.chastain@clackamas.edu](mailto:april.chastain@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- recognize and evaluate key pests in the landscape and propose solutions based on IPM strategies.

## Requirements

Fall Term		Credits
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
<b>Credits</b>		<b>4</b>
Winter Term		
HOR-216	Integrated Pest Management	3
HOR-237	Disease Identification	2
<b>Credits</b>		<b>5</b>
Spring Term		
HOR-120	Pesticide Laws & Safety	1
HOR-281	Horticulture/CWE	6
or HOR-280 and HOR-282	or Horticulture/CWE and Horticulture/ CWE	
<b>Credits</b>		<b>7</b>
<b>Total Credits</b>		<b>16</b>

## Careers

Career opportunities include:

- Plant Health Management Technician or Pest Control Specialist in:
  - nurseries
  - greenhouses
  - parks
  - golf courses
  - landscape management
  - arboriculture
  - production agriculture

## Project Management Tools & Techniques, Career Pathway Certificate

Program Code: CC.PMTOOLTECH

This program is designed for students with prior project management experience and good interpersonal skills who want to develop their technical competencies in project management. It provides a foundation

in fundamental project processes such as initiation, planning, execution, monitoring and control, and closing. The program also focuses on management techniques, such as project management. The software programs, Microsoft Project and Excel, are employed for project estimating, scheduling, tracking, and analysis. This program provides the tools and techniques required for successful project management.

For more information, contact Frank Corona, 503-594-6498 or [francisco.corona@clackamas.edu](mailto:francisco.corona@clackamas.edu).

## Outcomes

### Program Outcomes

Upon successful completion of this program, students should be able to:

- identify project management's five process groups along with primary activities associated with each;
- successfully employ common project management tools, such as a work breakdown structure, network diagram, risk assessment, and earned value management;
- employ common software tools for project management within the context of a defined scenario, plan, execute, control, and close a project;
- develop and maintain budgets to track financial and human resources.

## Requirements

Fall Term		Credits
BA-120	Project Management Fundamentals	4
BA-125	Advanced Project Management Tools	5
COMM-111Z	Public Speaking	4
<b>Credits</b>		<b>13</b>
Winter Term		
BA-127	Project Management: Agile & Change Management	4
BA-128	Project Management: Leadership Strategies	4
BA-251	Supervisory Management	3
<b>Credits</b>		<b>11</b>
Spring Term		
BA-264	Project Management Tools	3
CS-135S	Microsoft Excel	3
Electives (p. 225)		4
<b>Credits</b>		<b>10</b>
<b>Total Credits</b>		<b>34</b>

## Electives

Any [BA \(p. 255\)](#) or [BT \(p. 258\)](#) course not included in the program. [CS \(p. 261\)](#) courses as approved by the department.

Any of the following courses:

Code	Title	Credits
FYE-101	First Year Experience Level I	2
FYE-102	First Year Experience Level II	1
WR-101	Workplace Writing	4

## Under Car Technician - Automatic Transmission, Career Pathway Certificate

**Program Code:** CC.UNDRCARTECAUTO

The Under Car Technician - Automatic Transmission Program combines the initial courses of the [Automotive Service Technology AAS \(p. 132\)](#) to provide the student with an opportunity to gain entry-level employment. This alternate first-year schedule offers accelerated employment qualification for the student. These courses train the student in the skills necessary to earn certification from Automotive Service Excellence (ASE) in the specified areas of A2, A3, A4, and C1, as described in the ASE Alignment Section. Coursework also qualifies the student to earn American Welding Society (AWS) certification. The National Institute for Automotive Service Excellence requires two years of documented time in trade before testing, and this nine-month program is awarded 4.5 months' equivalency. The AWS requires one year of documented time in trade before testing.

For information contact Dustin Bates, 503-594-3973 or [dustinb@clackamas.edu](mailto:dustinb@clackamas.edu), or the Automotive and Welding Department, 503-594-3047.

### Outcomes

#### Program Outcomes

Upon successful completion of this program, students should be able to:

- practice safety precautions to protect the environment, students, and the vehicle;
- test and repair basic automotive electrical systems;
- diagnose, repair, and service modern suspension systems;
- diagnose, repair, and service front and rear wheel drive manual drive train and axle systems;
- diagnose, repair, and service front and rear wheel drive automatic transmissions.

### Requirements

Fall Term		Credits
AM-101	Intro to Automotive Service Technology	2
AM-129	Electrical Systems I	5
AM-130	Brake Systems	5
<b>Credits</b>		<b>12</b>
Winter Term		Credits
AM-131	Suspension Systems	5
AM-245	Automatic Transmission Systems	5
WLD-102	Introduction to Welding	2
<b>Credits</b>		<b>12</b>
Spring Term		Credits
AM-135	Power Transmission Systems	5
AM-228	Service Shop Management	4
<b>Credits</b>		<b>9</b>
<b>Total Credits</b>		<b>33</b>

### ASE Alignment

- AM-131 Suspension Systems aligns with ASE A4 Suspension & Steering
- AM-135 Power Transmission Systems aligns with ASE A3 Manual Drive Train & Axles
- AM-228 Service Shop Management aligns with ASE C1 Automobile Service Consultant
- AM-245 Automatic Transmission Systems aligns with ASE A2 Automatic Transmission/Transaxle

### Careers

Career opportunities include:

- automatic transmission technician
- front-end and alignment technician
- drive axle specialist
- four-wheel drive service technician
- apprentice technician
- service writer
- brake technician

## Under Car Technician - Manual Transmission, Career Pathway Certificate

**Program Code:** CC.UNDERCARTECMAN

The Under Car Technician - Manual Transmission program combines the initial courses of the [Automotive Service Technology AAS \(p. 132\)](#) to provide the student with an opportunity to gain entry-level employment. This alternate first-year schedule offers accelerated employment qualification for the student. These courses train the student in the skills necessary to earn certification from Automotive Service Excellence (ASE) in the specified areas of A3, A4, A5, and C1, as described in the ASE Alignment Section. Coursework also qualifies the student to earn American Welding Society (AWS) certification. The National Institute for Automotive Service Excellence requires two years of documented time in trade before testing, and this nine-month program is awarded 4.5 months' equivalency. The AWS requires one year of documented time in trade before testing.

For information contact Dustin Bates, 503-594-3973 or [dustinb@clackamas.edu](mailto:dustinb@clackamas.edu), or the Automotive and Welding Department, 503-594-3047.

### Outcomes

#### Program Outcomes

Upon successful completion of this program, students should be able to:

- practice safety precautions to protect the environment, students, and the vehicle;
- test and repair basic automotive electrical systems;
- diagnose, repair, and service modern automotive brake systems including, anti-locking systems, traction control systems, and stability control systems;
- diagnose, repair, and service modern suspension systems;

- diagnose, repair, and service front and rear wheel drive manual drive train and axle systems.

## Requirements

Fall Term		Credits
AM-101	Intro to Automotive Service Technology	2
AM-129	Electrical Systems I	5
AM-130	Brake Systems	5
<b>Credits</b>		<b>12</b>
Winter Term		Credits
AM-131	Suspension Systems	5
WLD-102	Introduction to Welding	2
<b>Credits</b>		<b>7</b>
Spring Term		Credits
AM-135	Power Transmission Systems	5
AM-228	Service Shop Management	4
<b>Credits</b>		<b>9</b>
<b>Total Credits</b>		<b>28</b>

## ASE Alignment

- AM-130 Brake Systems aligns with ASE A5 Brakes
- AM-131 Suspension Systems aligns with ASE A4 Suspension & Steering
- AM-135 Power Transmission Systems aligns with ASE A3 Manual Drive Train & Axles
- AM-228 Service Shop Management aligns with ASE C1 Automobile Service Consultant

## Careers

Career opportunities include:

- manual transmission technician
- front-end and alignment technician
- brake technician
- drive axle specialist
- four-wheel drive service technician
- apprentice technician
- service writer

## Video Production Technician, Career Pathway Certificate

Program Code: CC.VIDEOPRODTECH

The Video Production Technician certificate prepares students for entry-level positions in the field of video production. Students attain knowledge and learn skills to seek careers in creative and support professions related to video production, such as visual and audio editing, production, post production, sound design, duplication production assistant, camera operators, digital media artists and animators, titling, and motion graphics.

For information contact Mark Devendorf, 503-594-6247 or [mark.devendorf@clackamas.edu](mailto:mark.devendorf@clackamas.edu).

## Outcomes Program Outcomes

Upon successful completion of this program, students should be able to:

- create and produce a work by logging and capturing raw video, cutting video sequences into individual shots, generating text to place into video and using skills with software to produce a professionally edited video;
- demonstrate skills and understanding in visual editing by assembling shots into cohesive and meaningful order within a timeline and use effects such as video transitions and color correction;
- demonstrate skills and understanding in audio editing by adjusting audio levels and apply audio crossfades;
- demonstrate competency in entry-level positions in the field of video production;
- display skills and knowledge of software used in the digital media industry by using the software to create the work and using advanced techniques like, compositing multiple video clips together.

## Requirements

Fall Term		Credits
DMC-100	Introduction to Media Arts	3
DMC-104	Digital Video Editing	4
DMC-247 or MUS-247	Sound for Media or Sound for Media	3
DMC-264	Digital Filmmaking	4
<b>Credits</b>		<b>14</b>
Winter Term		Credits
DMC-106	Animation & Motion Graphics I	4
DMC-291	Digital Media Communications Portfolio Project I	4
WR-121Z	Composition I	4
<b>Credits</b>		<b>12</b>
Spring Term		Credits
BA-101	Introduction to Business	4
COMM-100Z or PSY-101	Introduction to Communication or Human Relations	3-4
DMC-242	Field Recording for Media	1
WR-262	Introduction to Screenwriting	4
<b>Credits</b>		<b>12-13</b>
<b>Total Credits</b>		<b>38-39</b>

## Careers

Career opportunities include:

- audio and video equipment technicians
- broadcast technician
- camera operators
- film/video editor
- media and communication equipment workers
- media and communication workers
- digital media artists and animators

## Wilderness Survival & Leadership, Career Pathway Certificate

Program Code: CC.WILDSURVIVAL

The Wilderness Survival & Leadership program is designed for those students who would like to pursue a variety of careers in the outdoors. Students will understand leadership, survival, and rescue in the wilderness. The certificate is part of the [Wildland Fire Science Certificate \(p. 214\)](#).

For information contact Dan LoFaro, 503#594#3683 or [daniel.lofaro@clackamas.edu](mailto:daniel.lofaro@clackamas.edu), or visit [www.clackamas.edu/fire-science](http://www.clackamas.edu/fire-science).

### Outcomes

#### Program Outcomes

Upon successful completion of this program, students should be able to:

- evaluate hazards in the wilderness environments and take appropriate actions to ensure personal safety;
- demonstrate first aid and CPR skills used in the field;
- demonstrate the basics of land navigation;
- effectively communicate with pertinent individuals to accomplish the mission and/or incident objectives;
- lead, supervise, and direct personnel successfully at the appropriate level of organization.

### Requirements

Code	Title	Credits
FRP-243	Wilderness I: Psychology of Survival	3
FRP-244	Wilderness II: Basic Land Navigation (S-244)	3
FRP-245	Wilderness III: Weather of the Northwest	2
FRP-246	Wilderness IV: Backcountry CPR/First Aid/AED	2
FRP-248	Wilderness V: Introduction to Search and Rescue	2
FRP-249	Followership to Leadership (L-280)	2
FRP-250	Wilderness VI: Basic Tool Use and Care	1

**Total Credits** 15

Note: Courses do not need to be taken in sequence

### Careers

Career opportunities include:

- parks and recreation
- guide services
- search and rescue
- state and federal agencies
- private organizations
- forestry jobs
- wildland firefighting

The certificate gives students the necessary skills to lead and/or participate in any program in a wide variety of settings that require leadership and competency in the outback regions of the Northwest.

## Wildland Fire Forestry, Career Pathway Certificate

Program Code: CC.FIREFOREST

The Wildland Fire Forestry program provides training in forestry and conservation skills needed for technicians in this field of work. Intended for students who would like to pursue a variety of careers in the outdoors. Students are introduced to the functions, basic tools and processes to manage forestland in Oregon.

For information contact Dan LoFaro, 503#594#3683 or [daniel.lofaro@clackamas.edu](mailto:daniel.lofaro@clackamas.edu), or visit [www.clackamas.edu/fire-science](http://www.clackamas.edu/fire-science).

### Outcomes

#### Program Outcomes

Upon successful completion of this program, students should be able to:

- summarize use of silviculture and regeneration practices;
- identify trees and shrubs commonly found in Oregon;
- explain the basics of forest road development;
- demonstrate use of forest measurement tools;
- explain the principles of marketing timber;
- identify logging systems.

### Requirements

Code	Title	Credits
BI-103	General Biology; Plants & The Ecosystem	4
FRP-101	Basic Forest Management	3
FRP-102	Basic Forest Management Lab	1
FRP-201	Advanced Forest Management	3
FRP-244	Wilderness II: Basic Land Navigation (S-244)	3
FRP-246	Wilderness IV: Backcountry CPR/First Aid/AED	2
GIS-101	Principles of Geospatial Technology	2

**Total Credits** 18

## Wildland FireFighter 1, Career Pathway Certificate

Program Code: CC.FIREFIGHT1

This program will provide students the opportunity to gain the skills necessary to prepare them for entry-level jobs in the wildland firefighting industry. The courses will be offered over three terms so students will be ready for employment late spring.

For information contact Dan LoFaro, 503#594#3683 or [daniel.lofaro@clackamas.edu](mailto:daniel.lofaro@clackamas.edu), or visit [www.clackamas.edu/fire-science](http://www.clackamas.edu/fire-science).

### Outcomes

#### Program Outcomes

Upon successful completion of this program, students should be able to:

- evaluate hazards in the wilderness environments and take appropriate actions to ensure personal safety;
- demonstrate safe operation of firefighting tools and equipment;
- effectively communicate with pertinent individuals to accomplish the mission and/or incident objectives;
- successfully lead, supervise, and direct incident personnel at the appropriate level of organization.

## Requirements

Code	Title	Credits
FRP-130	Introduction to Wildland Firefighting (S-130/S-190/ICS-100/IS-700/L-180)	2
FRP-131	Advanced Firefighter Training (S-131/S-133)	1
FRP-211	Portable Pumps and Water Use (S-211)	2
FRP-244	Wilderness II: Basic Land Navigation (S-244)	3
FRP-246	Wilderness IV: Backcountry CPR/First Aid/AED	2
FRP-249	Followership to Leadership (L-280)	2
FRP-250	Wilderness VI: Basic Tool Use and Care	1
FRP-270	Basic Air Operations (S-270)	1
<b>Total Credits</b>		<b>14</b>



## RELATED INSTRUCTION

- For an Associate of Applied Science (AAS) degree complete one course from each of the Related Instruction areas
- For a Certificate of Completion (CC) that is at least one academic year, complete one course from the Communication, Computation, and Human Relations Related Instruction areas

### Communication

Read actively, think critically, and write purposefully and capably for professional audiences

Code	Title	Credits
BA-214	Business Communications	3
BT-124	Business Editing I	3
WR-101	Workplace Writing	4
WR-121Z	Composition I	4
WR-122Z	Composition II	4
WR-124ES	Escritura de ensayos de nivel universitario en español	4
WR-222	English Composition	4
WR-227Z	Technical Writing	4

### Computation

Use appropriate mathematics to solve problems

Code	Title	Credits
<b>Computer Science</b>		
CS-133VB	Visual Basic.NET I	3
CS-161	Computer Science I	4
CS-162	Computer Science II	4
CS-260	Data Structures	4
<b>Mathematics</b>		
BA-104	Business Math	3
MTH-050	Technical Mathematics I	4
MTH-065	Algebra II	4
Higher Level Math or Statistics (except MTH-199 and MTH-299)		

### Human Relations

Engage in ethical communication processes that accomplish goals

Code	Title	Credits
<b>Business</b>		
BA-285	Human Relations in Business	4
<b>Criminal Justice</b>		
CJA-250	Reporting, Recording & Testifying	4
<b>Education</b>		
ECE-258ES	Equidad y Diversidad en La Educación Infantil	4
ED-258	Culturally Responsive Teaching & Education	3
<b>Human Services</b>		
HD-161	Multicultural Awareness	3
HS-156	Conducting Human Service Interviews	3
<b>Oral Communication</b>		
COMM-100Z	Introduction to Communication	4

Code	Title	Credits
COMM-126	Introduction to Gender Communication	4
COMM-140	Introduction to Intercultural Communication	4
COMM-218Z	Interpersonal Communication	4
COMM-219	Small Group Discussion	4
COMM-227	Nonverbal Communication	4
<b>Psychology</b>		
PSY-101	Human Relations	3
PSY-215	Introduction to Developmental Psychology <sup>1</sup>	4

<sup>1</sup> for Nursing (RN) AAS only

### Physical Education/Health/Safety/First Aid

Use effective life skills to improve and maintain mental and physical wellbeing

Code	Title	Credits
<b>Health/Safety/First Aid</b>		
FRP-246	Wilderness IV: Backcountry CPR/First Aid/AED	2
FRP-255	Physical Fitness and Nutrition for First Responders	2
HOR-115	Horticulture Safety	1
MFG-107	Industrial Safety & First Aid	3

[HE Courses \(p. 290\)](#)

**Physical Education**

[HPE Courses \(p. 290\)](#)

[PE Courses \(p. 322\)](#)

Students are encouraged to work closely with an academic advisor if they are planning to transfer to a four-year institution upon completion of any of these programs.

# COOPERATIVE WORK EXPERIENCE (CWE)

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The Cooperative Work Experience (CWE) is an internship program which offers students the opportunity to earn college credit by working in a job directly related to their program of study. CWE offers expanded learning experiences through exposure to actual work situations, organizational relationships, equipment, and techniques that cannot be duplicated in the classroom.

CCC's CWE program creates a vital bridge between college studies and workplace success

## Requirements & Registration for CWE:

- Declare a program of study and complete all prerequisites for CWE.
- 1-3 terms before the end of your program, meet with the CWE instructor in your department to discuss CWE requirements.
- Determine number of credits to enroll in. You are expected to work approximately 30 hours for each CWE credit.
- Secure the CWE Work Site
  - If you have a job appropriate to your program of study, get this approved by your CWE instructor.
  - If you do not have a CWE site, find one with the assistance of your instructor.
- Final Steps to enrolling in CWE
  - Fill out online application. (Application can be found at [www.clackamas.edu/cwe](http://www.clackamas.edu/cwe))
  - Fill out the form with 1) the appropriate CWE course for program of study, and 2) the classroom or online CWE seminar.
  - Get signature from your instructor on the registration form.
  - Get signature and stamp from the CWE office on the registration form.
  - Turn registration form in to registration office.
- Participate in a CWE seminar course on career management skills and complete seminar assignments.
- Successfully complete 30 hours of work experience for every credit.

## Credit & Grading

The number of credits earned depends on the number of hours worked and the program requirements. Students may earn a maximum of 12 CWE credits per year.

# of Credits	Hours Worked per Week	Total Hours per Term	Seminar Hours per Term
6 credits	18-20 hours	180-216 hours	16 hours
5 credits	15-17 hours	150-179 hours	16 hours
4 credits	12-14 hours	120-149 hours	16 hours
3 credits	9-11 hours	90-119 hours	16 hours
1 credit	3-5 hours	30-59 hours	16 hours

# COURSE DESCRIPTIONS

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- Adult Basic Education (ABE) (p. 236)
- Adult Secondary Education (ASE) (p. 236)
- American Sign Language (ASL) (p. 238)
- Anthropology (ANT) (p. 238)
- Apprenticeship (APR) (p. 239)
- Art (ART) (p. 247)
- Arts & Sciences (ASC) (p. 250)
- Auto Body/Collision Refinishing (ABR) (p. 250)
- Auto Body/Collision Repair (AB) (p. 251)
- Automotive Service Technology (AM) (p. 251)

## B

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- Business Administration (BA) (p. 255)
- Business Technology (BT) (p. 258)

## C

- Chemistry (CH) (p. 259)
- Communication Studies (COMM) (p. 260)
- Computer Science (CS) (p. 261)
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- Cooperative Work Experience (CWE) (p. 264)
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## D

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- Digital Media Communications (DMC) (p. 269)

## E

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## F

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- Fire Science Technology (FST) (p. 285)
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## I

- Industrial Maintenance Technology (IMT) (p. 299)

## J

- Journalism (J) (p. 299)

## L

- Library (LIB) (p. 300)

## M

- Machine Tool Technology (MTT) (p. 300)
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- Manufacturing Technology (MFG) (p. 302)
- Mathematics (MTH) (p. 303)
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## Elective Course Lists

### CTE Electives - AAOT, ASOT

#### Career Technical Education (CTE) Courses by Subject

Courses numbered 100 or above in the subjects listed below may be used in the Elective Courses and Elective and/or University Specific Requirement areas of the AAOT, ASOT-Business, and ASOT-Computer Science degrees. Career Technical Courses (CTE) used in these areas may not exceed 12 credits.

Subject Code	Description
AB	Auto Body/Collision Repair
ABR	Auto Body/Collision Refinishing
AM	Automotive Service Technology
APR	Apprenticeship
BA	Business Administration <sup>1</sup>
BT	Business Technology <sup>2</sup>
CDT	Computer-Aided Drafting Technology
CJA	Criminal Justice <sup>3</sup>
CS	Computer Science <sup>4</sup>
CWE	Cooperative Work Experience
DA	Dental Assistant
DMC	Digital Media Communications <sup>5</sup>
ECE	Early Childhood Education <sup>6</sup>
EET	Electronics Engineering Technology
EMP	Emergency Management Professional
EMT	Emergency Medical Technology
ESH	Environmental Safety & Health
FRP	Fire Science (Wildland)
FST	Fire Science Technology
GBC	Green Building Construction
GIS	Geographic Information Systems
GRN	Gerontology
HDF	Human Development/Family Services
HOR	Horticulture/Arboriculture/Landscape/Organic Farming
HS	Human Services <sup>7</sup>
IMT	Industrial Maintenance Technology
MA	Medical Assistant
MBC	Medical Billing and Coding
MET	Manufacturing Engineering Technology
MFG	Manufacturing Technology
MTT	Machine Tool Technology
MUS	Music <sup>8</sup>
NRS	Nursing
NUR	Nursing
OST	Occupational Skills Training
PHB	Phlebotomy
PS	Political Science <sup>9</sup>
RET	Renewable Energy Technology
SDP	Supervisory Training
SM	Electronics & Microelectronics
SOC	Sociology <sup>10</sup>

Subject Code	Description
WET	Water & Environmental Technology <sup>11</sup>
WLD	Welding Technology
WR	Writing <sup>12</sup>

- <sup>1</sup> Only BA-264 Project Management Tools
- <sup>2</sup> Except BT-174 Microsoft Digital Tools for the Professional
- <sup>3</sup> Only CJA-206 Trauma Informed Practices
- <sup>4</sup> Only CS-151 Networking 1, CS-152 Networking 2, CS-153 Networking 3, CS-227 Computer Hardware & Repair, CS-240M macOS Administration, CS-240W Windows Desktop Administration, CS-284 Network Security, CS-288W Windows Network Administration, CS-289 Web Server Administration
- <sup>5</sup> Except DMC-147 Music, Sound & Moviemaking, DMC-230 Documentary Film Production, DMC-280 Digital Media Communications/CWE
- <sup>6</sup> Except ECE-291 Practicum II, ECE-292 Practicum III
- <sup>7</sup> Except HS-210 Motivational Interviewing, HS-232 Case Management
- <sup>8</sup> Only MUS-140 Careers in Music, MUS-141 Introduction to the Music Business, MUS-171 Sound Design, MUS-207 Advanced Recording Techniques: Drums, MUS-218 MPT Seminar I, MUS-219 MPT Seminar II, MUS-220 MPT Seminar III, MUS-242 Music Creation with Ableton LIVE, MUS-247 Sound for Media
- <sup>9</sup> Only PS-280 Political Science/CWE
- <sup>10</sup> Only SOC-280 Sociology/CWE
- <sup>11</sup> Except WET-010 Wastewater Operations I, WET-011 Waterworks Operations I, WET-020 Wastewater Operations II, WET-021 Waterworks Operations II, WET-030 Wastewater Operations III, WET-031 Water Treatment
- <sup>12</sup> Only WR-128 Introduction to APA Style & Documentation

## Lower Division Electives - AAOT, ASOT

### Lower Division Collegiate Courses by Subject

Courses numbered 100 or above in the subjects listed below may be used in the Elective Courses and Elective and/or University Specific Requirement areas of the AAOT, ASOT-Business, and ASOT-Computer Science degrees.

Subject Code	Description
ANT	Anthropology
ART	Art
ASC	Arts & Sciences
ASL	American Sign Language
BA	Business Administration <sup>1</sup>
BI	Biology
BT	Business Technology <sup>2</sup>
CH	Chemistry
CJA	Criminal Justice <sup>3</sup>
COMM	Communication Studies
CS	Computer Science <sup>4</sup>
DMC	Digital Media Communications <sup>5</sup>
EC	Economics
ECE	Early Childhood Education <sup>6</sup>
ED	Education
EFA	Educational Focus Area

Subject Code	Description
EL	Study Skills
ENG	English Literature
ENGR	Engineering
ES	Ethnic Studies
ESR	Environmental Science
FN	Food & Nutrition
FR	French
FYE	First Year Experience
G	Geology
GEO	Geography
GER	German
GS	General Science
HD	Human Development/Career Planning
HE	Health
HPE	Health & Fitness
HS	Human Services <sup>7</sup>
HST	History
HUM	Humanities
J	Journalism
LIB	Library
MTH	Mathematics <sup>8</sup>
MUP	Music Performance
MUS	Music <sup>9</sup>
PE	Physical Education
PH	Physics
PHL	Philosophy
PS	Political Science <sup>10</sup>
PSY	Psychology
R	Religion
SOC	Sociology <sup>11</sup>
SPN	Spanish
SSC	Social Science
STAT	Statistics
TA	Theatre Arts
WR	Writing <sup>12</sup>
WS	Women's Studies
Z	Zoology

Algebra II, MTH-080 Technical Mathematics II, MTH-082A Wastewater Math I, MTH-082B Waterworks Math I, MTH-082C Wastewater Math II, MTH-082D Waterworks Math II, MTH-082E Math for High Purity Water, MTH-095 Algebra III, MTH-098 College Math Foundations

<sup>9</sup> Except MUS-090 Preparation for Music Theory, MUS-140 Careers in Music, MUS-141 Introduction to the Music Business, MUS-171 Sound Design, MUS-207 Advanced Recording Techniques: Drums, MUS-218 MPT Seminar I, MUS-219 MPT Seminar II, MUS-220 MPT Seminar III, MUS-242 Music Creation with Ableton LIVE, MUS-247 Sound for Media

<sup>10</sup> Except PS-280 Political Science/CWE

<sup>11</sup> Except SOC-280 Sociology/CWE

<sup>12</sup> Except WR-128 Introduction to APA Style & Documentation

<sup>1</sup> Except BA-264 Project Management Tools

<sup>2</sup> Only BT-174 Microsoft Digital Tools for the Professional

<sup>3</sup> Except CJA-206 Trauma Informed Practices

<sup>4</sup> Except CS-151 Networking 1, CS-152 Networking 2, CS-153 Networking 3, CS-227 Computer Hardware & Repair, CS-240M macOS Administration, CS-240W Windows Desktop Administration, CS-284 Network Security, CS-288W Windows Network Administration, CS-289 Web Server Administration

<sup>5</sup> Only DMC-147 Music, Sound & Moviemaking, DMC-230 Documentary Film Production, DMC-280 Digital Media Communications/CWE

<sup>6</sup> Only ECE-291 Practicum II, ECE-292 Practicum III

<sup>7</sup> Only HS-210 Motivational Interviewing, HS-232 Case Management

<sup>8</sup> Except MTH-010 Fundamentals of Arithmetic I, MTH-020 Fundamentals of Arithmetic II, MTH-050 Technical Mathematics I, MTH-050ES Matemáticas Técnicas I, MTH-060 Algebra I, MTH-065



## Adult Basic Education (ABE)

### ABE-012 Adult Basic Education

0 credits, Fall/Winter/Spring/Summer

Instruction offered to improve reading, writing, and math skills in order to transition to college classes, GED preparatory classes, or career related goal. Students must be 16 years or older. Required: Student Petition.

### ABE-080 ESOL Tutoring

0 credits, Fall/Winter/Spring/Summer

Adult students meet one-on-one or in a small group with a tutor to focus on specific learning needs. The sessions are held in various public places throughout Clackamas County, such as libraries, schools, churches and the college campuses and outreach sites. Tutors help set student goals and a plan of learning. This class is a supplement to other ESOL, ABE, or GED classes. Required: Student Petition.

## Adult Secondary Education (ASE)

### ASE-010 Basic Math

0.5 credits, Fall/Winter/Spring/Summer

Math concepts: addition, subtraction, multiplication, and division of whole numbers; fractions and decimals; percentage; measurement; graphs; ratio and proportion; and basic principles of algebra and geometry. Course is geared to those students who need a slower-paced approach. Elective credit only for high school diploma requirement. May be repeated for up to 1.5 high school credits. Required: Student Petition.

### ASE-011 Applied Math I

0.5 credits, Fall/Winter/Spring/Summer

Presents the use of the numbers and operations of arithmetic; basic algebra and geometry are integrated throughout the course. The use of technology is integrated throughout the course. A scientific calculator is required for the course. .5 high school credit. Required: Student Petition.

### ASE-012 Applied Math II

0.5 credits, Fall/Winter/Spring/Summer

Continues operations of arithmetic, basic algebra and geometry. Introduces polynomial expressions, linear equations and inequalities, graphing, and the coordinate plane. The use of technology is integrated throughout the course. A scientific calculator is required for the course. .5 high school credit. Required: Student Petition.

### ASE-015 Basic English

0.5 credits, Fall/Winter/Spring/Summer

Review of English fundamentals of grammar, spelling, capitalization, and punctuation through English literature and writing. Builds a better understanding of audience and purpose for writing. May be repeated for up to 1.5 high school credits. Required: Student Petition.

### ASE-016 Intermediate English

0.5 credits, Fall/Winter/Spring/Summer

Review instruction in standard written English with emphasis on paragraph construction and editing. Includes practical applications of complex sentence patterns, subject and verb agreement, ownership, writing development, and other writing skills. May be repeated for up to 1.5 high school credits. Required: Student Petition.

### ASE-017 Advanced English

0.5 credits, Fall/Winter/Spring/Summer

Language arts course covering English literary analysis, strategies to improve comprehension and writing skills. Addresses a variety of writing modes including creative, descriptive, expository and persuasive. Builds on strategies for reading, writing and editing. May be repeated for up to 1.0 high school credit. Required: Student Petition.

### ASE-020 Literature I

0.5 credits, Fall/Winter/Spring/Summer

Course focuses on literature from US History from the American Indians to present day. Literature is linked to significant historical events and gives insight to the authors' mindsets. Addresses how literature facilitates understanding of political, economic, and religious forces. Required: Student Petition.

### ASE-021 Effective Study Skills

0.5 credits, Fall/Winter/Spring/Summer

Emphasizes practical study skills for college students. Strategies for organizing study materials and time, remembering information, studying textbooks and taking lecture notes will be applied. Methods of preparing for tests, taking tests, and managing on-line course components such as Moodle are addressed. Required: Student Petition.

### ASE-026 Health I

0.5 credits, Fall/Winter/Spring/Summer

Presents issues impacting psychosocial health; addresses lifestyle choices and strategies to evaluate long term positive and negative impacts on health. Required: Student Petition.

### ASE-028 Global Studies I

0.5 credits, Fall/Winter/Spring/Summer

Focuses on geographic factors that contribute to patterns of human settlement and economic development. Required: Student Petition.

### ASE-029 Global Studies II

0.5 credits, Fall/Winter/Spring/Summer

Focuses upon examination, prediction, and critical evaluation of the interrelationships of human and physical geographies of Europe, Asia, Africa and Australia. Required: Student Petition.

### ASE-032 U.S. History I

0.5 credits, Fall/Winter/Spring/Summer

Focuses on the settlement of America to the Great Depression, emphasizing the development of economic, political, and social systems. Analyzes causes and effects of wars and policies, and examines the growth of technology. Emphasizes the use of evidence to evaluate historical events and trends. Required: Student Petition.

### ASE-033 U.S. History II

0.5 credits, Fall/Winter/Spring/Summer

Focuses on the societal issues, trends, and events of US history from World War II to the present including the Cold War, civil rights movement, Vietnam War, and terrorism. Analyzes causes and effects of wars and domestic and foreign policy, and examines the growth of technology. Required: Student Petition.

### ASE-034 Government I

0.5 credits, Fall/Winter/Spring/Summer

Introduces the basic principles of American government, including the branches of federal, state, and local government and how they interact. Explores foundational documents, and applies concepts to contemporary issues. Explores roles of government as they apply to foreign and domestic policies and policy shifts. Required: Student Petition.

### ASE-035 Career Exploration I

0.5 credits, Fall/Winter/Spring/Summer

Explores student role models, personal strengths and weaknesses, factors influencing workplace satisfaction, online occupational sorters, training, and earning. Presents job search, acquisition, and retention strategies; defines appropriate workplace behaviors, and analyzes workplace problems in context. Required: Student Petition.

**ASE-036 Personal Finance I**

0.5 credits, Fall/Winter/Spring/Summer

Presents skills to promote realistic financial decisions regarding personal income and career planning, budgeting and saving, shopping and consumption, banking and credit, investing, and rights and responsibilities in the marketplace. Required: Student Petition.

**ASE-037 Basic Developmental Reading**

0.5 credits, Fall/Winter/Spring/Summer

Develops basic reading skills, including word parts, pronunciation, spelling, basic vocabulary, and comprehension skills. Employs strategies to assist students in becoming more proficient readers. Elective high school credit in the AHSD program. May be repeated for up to 1.5 high school credits. Required: Student Petition.

**ASE-038 Intermediate Reading**

0.5 credits, Fall/Winter/Spring/Summer

This course builds on word attack vocabulary, spelling, and reading comprehension skills to improve basic reading fluency and reading strategies. Introduces genre and focuses on academic texts. Required: Student Petition.

**ASE-039 Advanced Reading**

0.5 credits, Fall/Winter/Spring/Summer

Develops advanced vocabulary, reading comprehension skills, critical reading, and study skills. Explores reading in various genres including drama, poetry, fiction and non-fiction. Required: Student Petition.

**ASE-042 Job Skills Competency Lab**

0.5 credits, Fall/Winter/Spring/Summer

Provides overview of college and career processes and expectations including cooperative work experience for employed high school students to earn elective credit. Focuses on appropriate work and college behaviors, decision making techniques, communication skills, and teamwork. May be repeated for up to 2 high school credits. Required: Student Petition.

**ASE-046 Human Development**

0.5 credits, Not Offered Every Year

Provides instruction in the areas of parent education and life skills targeted to the issues of teen parents and high school students. This course will assist students in developing positive parenting skills, understanding of child development, appropriate practices for various developmental stages, building self-esteem, improving personal communication skills and developing survival skills. This course carries high school level credit only. May be repeated for up to 2 high school credits. Required: Student Petition.

**ASE-047 Physical Education I**

0.5 credits, Fall/Winter/Spring/Summer

Presents a broad perspective of sports activities including team cooperation. Explores the significance of sports in a variety of cultures. Analyzes rules, procedures, and practices that are safe and effective for specific activities. Explore the relationship between fitness and personal health goals. Set fitness goals and monitor progress. Required: Student Petition. This course carries high school credit only.

**ASE-054 American Civics II**

0.5 credits, Fall/Winter/Spring/Summer

Presents basic principles and ideals embedded in American democracy. Examines power, authority, government and public with relation to American ideals and the roles, rights, and responsibilities of citizens. Explores founding concepts and structures of American government including changing and managing the constitution. Required: Student Petition.

**ASE-056 Personal Finance II**

0.5 credits, Fall/Winter/Spring/Summer

Explores personal finance related to types of loans, debt, large purchases, taxes, insurance, investments, financial careers, and retirement. Required: Student Petition.

Prerequisite or Corequisite: ASE-057

**ASE-057 Careers II**

0.5 credits, Fall/Winter/Spring/Summer

Explores positive work ethics, personal qualities, people skills, workplace documents, problem solving, time management, and telecommunication devices. Required: Student Petition.

Corequisites: ASE-056

**ASE-058 Physical Education II**

0.5 credits, Fall/Winter/Spring/Summer

Presents a broad perspective of physical fitness including how to pursue and maintain a health enhancing level of physical fitness. Identifies the basic principles of fitness development, and how fitness and sports impact other cultures. Required: Student Petition. This course carries high school level credit only.

**ASE-059 Health II**

0.5 credits, Fall/Winter/Spring/Summer

Builds on concepts of ASE-026, Health I. Provides a more in-depth examination of the behaviors that pose a threat to a healthy living. Further practice evaluating positive choices for long term physical, mental and emotional health. Required: Student Petition.

**ASE-061 General Science/Frogs**

0.5 credits, Fall/Winter/Spring/Summer

Presents principles of diversity and interdependence of life, anatomy and physiology, and animal structure and function through virtual dissection. Required: Student Petition.

**ASE-062 Science/Desert Ecology**

0.5 credits, Fall/Winter/Spring/Summer

Presents principles of desert ecology. Explores how organisms interrelate and adapt to life in desert environments, how deserts are formed, and human impact on deserts. Required: Student Petition.

**ASE-063 General Science/Wetlands**

0.5 credits, Fall/Winter/Spring/Summer

Presents principles of the plant and animal kingdom in virtual wetlands. Explores organisms, classification systems, and processes, within wetland ecosystems. Required: Student Petition.

**ASE-066 Technology I**

0.5 credits, Fall/Winter/Spring/Summer

Focuses on the use of computers, understanding their structure and components, and word processing skills needed for academic environments. Required: Student Petition.

**ASE-067 Technology II**

0.5 credits, Fall/Winter/Spring/Summer

Focuses on the use of technology in academic and career areas. Provides students hands on experience working with spreadsheets, databases, presentations, and computer applications. Required: Student Petition.

**ASE-068 Literature II**

0.5 credits, Fall/Winter/Spring/Summer

Focuses on literature from 1850-present. Addresses written works and masterpieces emphasizing themes found throughout US history. Ties literature to national history to better understand political, economic, and religious forces influencing readers and authors. Required: Student Petition.

**ASE-069 Studio Art II**

0.5 credits, Not Offered Every Year

An overview and extension of basic design principles introduced in Studio Art I. Uses a variety of media including digital media to explore and expand concepts introduced in Studio Art I. Explores personal expression, feelings, and experiences. Analyzes well and lesser known works of art. Required: Student Petition. This course carries high school level credit only.

**ASE-071A Algebra 1A**

0.5 credits, Fall/Winter/Spring/Summer

Algebra 1A explores the relationship between mathematical quantities, reasoning with equations and inequalities, graphing, functions and mathematical modeling. Required: Student Petition.

**ASE-071B Algebra 1B**

0.5 credits, Fall/Winter/Spring/Summer

Algebra 1B reinforces concepts presented in Algebra 1A and introduces quadratic equations, parabolas, functions, and statistics related to data distributions. Required: Student Petition.

Prerequisites: ASE-071A or equivalent

**ASE-072A Algebra 2A**

0.5 credits, Fall/Winter/Spring/Summer

Algebra 2A reinforces the concepts covered in the Algebra 1A and B sequence focusing on applications. Additionally, Algebra 2A introduces complex numbers. Required: Student Petition.

Recommended Prerequisites: ASE-071A and ASE-071B or equivalent

**ASE-072B Algebra 2B**

0.5 credits, Fall/Winter/Spring/Summer

Algebra 2B reinforces the concepts presented in Algebra 1A and Algebra 2A. Additionally, Algebra 2B introduces basic trigonometric functions. Required: Student Petition.

**ASE-086 General Science/Birds**

0.5 credits, Fall/Winter/Spring/Summer

Presents principles of general science such as scientific classification, evolution and natural selection, distinguishing fact from value, the scientific method, and current events and their correlation to historical events in science by learning about bird adaptations, origins, physiology, flight, migration, and current scientific cases. Required: Student Petition.

**ASE-087 Physical Science: Exploring the Rainforests**

0.5 credits, Fall/Winter/Spring/Summer

Using virtual tours of the rainforest, students investigate the plant and animal life; animal characteristics; interdependence in an ecosystem; mechanisms in the biomass; and various types of rainforests. Required: Student Petition.

## American Sign Language (ASL)

**ASL-101 First-Year American Sign Language I**

4 credits, Fall

First term of a three-term introductory course. Everyday communication is the centerpiece of each lesson. Topics revolve around sharing information about ourselves and our environment. Grammar is introduced in context, with an emphasis on developing question and answering skills. Strategies are presented to help the student maintain a conversation.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ASL-102 First-Year American Sign Language II**

4 credits, Winter

Second term of a three-term introductory course. Emphasis will be on increasing communicative abilities. Course will focus on language functions such as making requests, describing others, and/or telling a short story. Grammar and vocabulary will also be emphasized throughout the course.

Prerequisites: ASL-101 with a C or better

**ASL-103 First-Year American Sign Language III**

4 credits, Spring

Third term of a three-term introductory course. Emphasis will be on developing conversational competence. Course includes basic ASL vocabulary and grammar used for basic communication such as opening conversations, clarifying, giving reasons, narrating family history, correcting, and elaborating.

Prerequisites: ASL-102 with a C or better

**ASL-201 Second-Year American Sign Language I**

4 credits, Fall

Review and expansion of American Sign Language vocabulary and structure in order to perfect expressive skill. Emphasizes active communication in sign language.

Prerequisites: ASL-103 with a C or better

**ASL-202 Second-Year American Sign Language II**

4 credits, Winter

Continuation of ASL-201. Emphasizes active communication in sign language. Increased emphasis on exploring, analyzing the rules, and presenting stories and literature in sign language.

Prerequisites: ASL-201 with a C or better

**ASL-203 Second-Year American Sign Language III**

4 credits, Spring

Continuation of ASL-202. Emphasizes active communication in sign language. Increased emphasis on exploring, analyzing the rules, discussing, developing, and presenting literature and poetry in sign language.

Prerequisites: ASL-202 with a C or better

## Anthropology (ANT)

**ANT-101 Physical Anthropology**

4 credits, Fall/Winter/Spring

Introduces the study of humans as biocultural beings in the context of modern genetics, evolutionary theory, primate taxonomy, anatomy and behavior, fossil hominines, and the role of the physical anthropologist in forensic science.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**ANT-102 Archaeology & Prehistory**

4 credits, Fall/Winter/Spring

Introduces the methods and theories used by archaeologists to study the development of human cultures. Provides a survey of world prehistory, tracing the transition of human societies from hunting and gathering to farming, to the beginning of urban life and the rise of early civilizations.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**ANT-103 Cultural Anthropology**

4 credits, Fall/Winter/Spring/Summer

Introduces the diversity of contemporary human cultures and the ways anthropologists study and compare them in an effort to understand how different societies organize their lives and make sense of the world around them. Explores the interrelationships among the various elements of culture.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**ANT-232 Native Americans of North America**

4 credits, Not Offered Every Term

A broad survey of the cultures, arts, and history of Native Americans north of Mexico. Uses archaeological, ethno-historical, and ethnographic evidence to explore the diversity of Native American cultures from prehistoric times to the present. Includes contemporary issues in Native American life.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**ANT-280 Anthropology/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of anthropology (may involve physical anthropology, and/or archaeology, and/or cultural anthropology). Variable Credit: 2-6 credits. Required: Student Petition.

Recommended Prerequisites: WRD-090 or placement in WRD-098

Corequisites: CWE-281

## Apprenticeship (APR)

**APR-104LM Reading Schematics and Symbols**

2 credits, Not Offered Every Term

A basic course of study that will develop the student's understanding of reading schematics and symbols through lectures and hands-on examples.

**APR-104MA Print Reading**

3 credits, Not Offered Every Term

Introduction to basic print reading. Students will use the principles of orthographic projection and current industry standards as they apply this knowledge to interpreting manufacturing prints.

**APR-106MA Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing**

1-3 credits, Not Offered Every Term

Introduces participants to the application of gauging and inspection using Geometric Dimensioning and Tolerancing (GDT). Students will identify inspection equipment and inspect GDT characteristics while experiencing their manufacturing implications. Variable Credit: 1-3 credits.

Prerequisites: APR-104MA

**APR-108LM ARC Flash Electrical Safety**

1 credits, Not Offered Every Term

This electrical safety training course provides the student with a basic understanding of safe workplace practices from industry standards and recommended practices, including NFPA 70E, IEEE, NEC, NESC and OSHA requirements.

**APR-109PB Plumbing Conservation Systems**

2 credits, Fall/Winter/Spring

This course introduces the student to the different plumbing systems in use today that reflect new technology and methods which conserve our natural resources. Solar Energy, Rainwater Harvesting, Reclaimed Water Systems, Vacuum and other minimum water consumptions systems.

Recommended: Student must be a currently registered Plumbing Apprentice with Area I, Joint Apprenticeship Training Committee

**APR-110UM Initial Meterman Training**

4 credits, Not Offered Every Term

This course is designed to instruct Meterman apprentice candidates on understanding the basic functions of a Meterman Journeyman. Required: Student Petition.

**APR-111LE Residential Technologies**

4 credits, Not Offered Every Term

During this course the student will receive an overview of the wide range of topics relating to residential technologies and in-depth instruction and hands-on experience on select topics. The course will cover home theater, multi-zone audio and video, HD television, networking, home automation, cabling techniques and applicable National Electrical Code articles. There will be an emphasis on how these systems integrate with each other.

Required: Student Petition.

Prerequisites: APR-115LE

**APR-111MA Manual Machining I**

4 credits, Not Offered Every Term

This course is an introduction to machine tool operation and precision measurement. It covers elementary operation of drill presses, bandsaws, lathes, and milling machines. The course includes external threading.

Recommended Prerequisite Or Corequisite: APR-104MA and MTH-050

**APR-111UE Line Estimator Basic I: Tools and Equipment**

4 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will learn to explain and summarize the basics of electric utility energy systems. The focus is on estimator field responsibilities and equipment used in the field.

**APR-111UL Outside Electrical Basic Theory I**

5 credits, Fall

Fundamentals of outside electrical apprenticeship related training. National Electrical Code standards, basic electrical Direct Current (DC) theory including Ohms law, electrical terminology, mathematical applications in electrical energy, rigging and safe work practices.

Required: Student Petition.

Required: Acceptance into Line-Electrician Apprenticeship program

**APR-111UM Metering: Basics I**

5 credits, Fall

In this course students will examine first-year apprentice responsibilities including job conduct, absenteeism, sexual harassment, drug use and safety. Also, students will begin the first step of electrical trade theory by reviewing math concepts including percentages, scientific notation, metric prefixes, ratios and proportions, and equations. As the lessons progress, electrical topics such as current, voltage, resistance, Ohm's Law, power, and DC series and parallel circuits will be introduced.

Required: Student Petition.



**APR-111UW** Basic Substation Wireman I

5 credits, Fall

In this course, students will examine apprentice responsibilities including job conduct, absenteeism, sexual harassment, drug use and safety. Students will also begin the first step of electrical trade theory by studying basic math concepts, including whole numbers, fractions, decimals, percentages and equations. As the lessons progress, electrical components such as current, voltage, resistance, Ohm's Law and power will be introduced. This course is part of the NJATC Substation curriculum. Required: Student Petition.

**APR-112LE** Basic Trade, Code & Safety

4 credits, Not Offered Every Term

Covers the basic fundamentals of low voltage cabling, fundamentals of workplace safety as it applies to construction in general and specific trade environments, and an overview of the current national electrical code and trade-related mathematics. Required: Student Petition. Required: Acceptance into Limited Energy Apprenticeship program

**APR-112MA** Manual Machining II

4 credits, Not Offered Every Term

This course is a continuation of machine tool operations. It covers set-up and operation of the vertical milling machine, lathe boring techniques, surface grinding and screw thread nomenclature.

Prerequisites: APR-111MA

**APR-112UE** Line Estimator Basic II: Electrical Theory

4 credits, Not Offered Every Term

This course covers the principles and concepts that govern electrical field operations. Students will utilize math and electric theory applications in the field. The focus is on electric utility systems.

**APR-112UL** Outside Electrical Basic Theory II

5 credits, Winter

Instructs first year, second term apprentices in electrical-related training. National Electric Code (NEC) standards, application of electrical Direct Current (DC) theory, including Ohm's law, electrical grid components, rigging, OSHA regulations, electrical terminology and mathematical applications. Required: Student Petition.

Prerequisites: APR-111UL

**APR-112UM** Metering: Basics II

5 credits, Winter

This course is designed to further first-year apprentice training by building on the concepts of electrical trade theory and introducing students to the aspects of substation safety. Apprentices will have the opportunity to use analog or digital meters to measure voltage, current, and resistance in DC circuits. Fundamentals of substation safety will be explored including responsibilities, personal protective equipment, fall protection, grounding and electrical hazard awareness. Required: Student Petition.

Prerequisites: APR-111UM

**APR-112UW** Basic Substation Wireman II

5 credits, Winter

Basic Substation Wireman II will build on the concepts of electrical trade theory and introduce students to the aspects of substation safety. Students will have the opportunity to use analog or digital meters to measure voltage, current, and resistance in DC circuits. Fundamentals of substation safety will be explored including responsibilities, personal protective equipment (PPE), fall protection, grounding and electrical hazard awareness. This course is part of the NJATC substation curriculum.

**APR-113LE** Specialized Control Systems

4 credits, Not Offered Every Term

Introduces specialized control systems, equipment and control devices with a physical, code and safety view. Control design and applications, installation, maintenance and measurements of low- and high-voltage systems will be covered. Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

**APR-113MA** Manual Machining III

4 credits, Not Offered Every Term

This course is a continuation of machine tool operations. Topics covered include offset boring heads, rotary tables, indexing devices, taper attachments and cylindrical grinding. Additional emphasis is also placed on inspections technique, technical math and optical comparators.

Prerequisites: APR-112MA

**APR-113UE** Line Estimator Basic III: Wire Circuits

4 credits, Not Offered Every Term

This course covers principles and concepts that govern safe wiring and circuit applications, safe working procedures, Ohm's Law calculations and use of aerial lift in field operations. The focus is on electric utility systems. Required: Student Petition.

Required: Acceptance into Line Estimator Apprenticeship program

**APR-113UL** Outside Electrical Basic Theory III

5 credits, Spring

Instruct first year, third term apprentices on fundamentals of electrical components and their application, National Electrical Code (NEC) standards, application of electrical Direct Current (DC) theory including Ohm's law, underground distribution, mathematical applications and safe work practices. Required: Student Petition.

Prerequisites: APR-112UL

**APR-113UM** Metering: Basics III

5 credits, Spring

This course continues first-year apprentice training by applying mathematics, electron theory and all aspects of DC electric circuit evaluation and construction and safe work practices. Required: Student Petition.

Prerequisites: APR-112UM

**APR-113UW** Basic Substation Wireman III

5 credits, Spring

Basic Substation Wireman III continues student training with the study of substation construction from prints to superstructure and bus design. Students will learn about various types of substation prints and drawings including single-line diagrams and schematics. This course will explore attributes of substation construction including foundations, platforms, ground grids, steel structures and the use of a boom truck and lift calculations. This course is part of the NJATC substation curriculum.

Required: Student Petition.

Prerequisites: APR-112UW

**APR-114LE** Data Communications

4 credits, Not Offered Every Term

This course provides a comprehensive understanding of Data Communications and Networking with practical application. Hands-on terminations of common cabling types (including optical fiber) and installation methods and standards. Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

**APR-115LE** Amplified Systems

4 credits, Not Offered Every Term

This course will cover audio theory, design and installation of audio and related systems and applicable National Electrical Code articles. There will be an emphasis on how amplified systems integrate with telecommunications equipment. Specific audio systems include intercom, loudspeaker paging, sound reinforcement and multi-zone. This course will also cover telecom basics including circuit types, PBXs and key systems and troubleshooting. Required: Student Petition.  
Required: Acceptance into Limited Energy Apprenticeship program

**APR-115UW** Substation Metering & Relay Overview

2 credits, Not Offered Every Term

This course introduces the apprentice to the duties of Substation Metering & Relay Technicians. It outlines how to perform testing, calibration, maintenance, installation and trouble shooting on new or existing equipment and circuit installation. It also details how to obtain line fault data and investigate equipment outages throughout the system on substations and/or switch yard equipment. In addition, this course provides the student with one-on-one time spent in the field with a Substation Metering & Relay Technician.  
Required: Attend all required days to be eligible for program credits

**APR-116LE** Security Systems

4 credits, Not Offered Every Term

Covers the fundamentals of designing, installing, and integration of a typical burglar (security) system and an access control system. Students will understand what the minimum required components are for each type of system, as well as what type of components are best suited for a given situation. A basic understanding for programming shall be provided. National Electric Codes relevant to these systems shall be reviewed. Required: Student Petition.  
Required: Acceptance into Limited Energy Apprenticeship program

**APR-116UM** Network Data Operations (NDO) Overview

1 credits, Not Offered Every Term

This course will give the meterman apprentice an overview of smart meter operations and associated systems/servers including Meter Data Collection (MDC), Sensus, Total Metering Solution (TMS), and MV90, the industry standard for information collection and storage. The Meterman Apprentice will gain a better understanding of the process around the use of smart meter data, including validation of the usage to ensure accurate readings as well as an understanding of alarms the meter can trigger out in the field.

**APR-117PB** Plumbing Basic Trade & Code

3 credits, Not Offered Every Term

Introduction to plumbing trade, tools and safety; mathematical functions review, scale rulers and gauges; related science relative to water, sewage, gases and dangers of waste products.  
Required: Acceptance into Plumbers Apprenticeship program

**APR-117UM** Special Tester Overview

2 credits, Not Offered Every Term

Apprentices will experience the daily duties of Special Testers as they do power quality testing and troubleshooting. They will learn what computer skills and applications are required, and meet the many work groups that Special Testers come in contact with. Required: Student Petition.

**APR-118UL** Transformer Connections I

1 credits, Fall/Winter/Spring/Summer

Designed to instruct apprentices or journey-level workers on the basic fundamentals of transformer bank connections: delta-delta, wye-wye, wye-delta, open-delta, open-delta-wye and single-phase regulators and conditions that can cause backfeed. Transformer Training is required to be taken each of the three years of a line apprenticeship in order to meet degree requirements.  
Required: Journeyman lineman or second step apprentice

**APR-118UM** Leadman Repairman Overview

2 credits, Not Offered Every Term

Apprentices will experience the daily duties of Leadman Repairman as they investigate customer service calls and install, maintain and remove customer services. Required: Student Petition.

**APR-119PT** Basic Trade & Safety

2 credits, Not Offered Every Term

Covers the history of painting, painting trade careers, professionalism in the painting trade, safety, and painting equipment & tools. Required: Student Petition.  
Required: Acceptance into Painters Apprenticeship program

**APR-121ECE** Observation and Guidance I in Ece Settings

4 credits, Winter

Course is designed to help students explore in depth observation and recording techniques of children's development and learning and to examine various child guidance techniques for children from birth - 3rd grade. Students will be provided with strategies to assist them in providing positive guidance to children in a variety of settings and situations.

**APR-121UE** Line Estimator Theory I: Operations

4 credits, Not Offered Every Term

This course covers the principles and concepts of electrical laws, codes, work safety habits, electrical calculations and electrical apparatus for power line work. the focus is on installation process for transformers, test equipment and field equipment.  
Required: Acceptance into Line Estimator Apprenticeship program

**APR-121UL** Outside Electrical Fundamental Theory I

5 credits, Fall

Instruct second-year apprentices on the principles and concepts of electrical laws, codes, work safety habits, electrical calculations, electrical apparatus for power line work and the installation process for transformers, test equipment and field equipment.  
Prerequisites: APR-113UL

**APR-121UM** Metering: Fundamentals I

5 credits, Fall

This course is designed to instruct second-year apprentices on the fundamentals of AC theory including the following: DC review, trigonometry review, Resistive-Capacitive (RC), Resistive-Inductive (RL), Resistive-Capacitive-Inductive (RLC) circuits, series and parallel resonance. Required: Student Petition.  
Prerequisites: APR-113UM

**APR-121UW** Fundamental Substation Wireman I

5 credits, Fall

Fundamental Substation Wireman I continues to explore high voltage substation equipment including transformers, switches, and reactive equipment. Students will also build on their knowledge of Direct Current (DC) theory while beginning the study of the fundamentals of Alternating Current (AC) theory. This course is part of the NJATC substation curriculum. Required: Student Petition.  
Prerequisites: APR-113UW



**APR-122UE** Line Estimator Theory II: Standards

4 credits, Not Offered Every Term

This course covers the principles and concepts of codes that dictate performance standards and safe work practices found in OSHA 1910.269. The focus is on interpreting schematic drawings, reading blue prints and staking sheets, methods for storing explosives, crane set up and criteria for safe boom lift.

Required: Acceptance into Line Estimator Apprenticeship program

**APR-122UL** Outside Electrical Fundamental Theory II

5 credits, Not Offered Every Term

Instruct second-year, second term apprentices on outside electrical apprenticeship related training as it applies to math, construction standards, vectors and safe work practices in electrical energy applications. Required: Student Petition.

Prerequisites: APR-111UL, APR-112UL, and APR-113UL

**APR-122UM** Metering: Fundamentals II

5 credits, Winter

This course is designed to instruct second-year apprentices on the graphic representation of system parameters (i.e. currents & voltages) and the various transformer line-ups that create those parameters.

Required: Student Petition.

Prerequisites: APR-121UM

**APR-122UW** Fundamental Substation Wireman II

5 credits, Winter

Fundamental Substation Wireman II identifies the role that transformers play in substations and takes a closer look at on-the-job safety. Included will be information on transformer construction, connections, tap changers and protection, as well as an introduction to transformer test instruments. Safety aspects will include lock-out/tag-out procedures, transformer hazards, grounding and step and touch potentials. Safety will be covered in greater detail, focusing on protective grounding live-line tools and arc flash compliance. This course is part of the NJATC substation curriculum. Required: Student Petition.

Prerequisites: APR-121UW

**APR-123UE** Line Estimator Theory III: Power Line

4 credits, Not Offered Every Term

This course covers electrical laws, work safety habits and electrical apparatus for power line work. The focus on safe working loads, street lighting circuits, connectors, conductors and ways to protect lines from abnormal voltage. Required: Student Petition.

Required: Acceptance into Line Estimator Apprenticeship program

**APR-123UL** Outside Electrical Fundamental Theory III

5 credits, Spring

Instruct the second year apprentice on cable applications, steps to restoring service, identification and care of hot line tools, lifting and digging operations with a mobile crane, traffic signal industry overview and basics of street lighting maintenance. Required: Student Petition.

Prerequisites: APR-122UL

**APR-123UM** Metering: Fundamentals III

5 credits, Spring

This course is designed to instruct second-year apprentices on the fundamentals of power calculations based on mathematical and planar approaches. Required: Student Petition.

Prerequisites: APR-122UM

**APR-123UW** Fundamental Substation Wireman III

5 credits, Spring

Fundamental Substation Wireman III students will develop a journey level understanding of cable splicing, fiber optic cables and power transformer maintenance while beginning detailed studies of other major substation equipment. This course is part of the NJATC substation curriculum.

Required: Student Petition.

Prerequisites: APR-122UW

**APR-127PB** Plumbing Fittings & Materials

3 credits, Not Offered Every Term

Methods of identifying and joining plastic, copper, cast iron, steel, glass and other piping materials as well as piping connections and plumbing code.

Required: Acceptance into Plumbers Apprenticeship program

**APR-128UL** Transformer Connections II

2 credits, Not Offered Every Term

Instruct apprentices or journey-level workers on the fundamentals of transformer bank connections: delta-delta, wye-wye, wye-delta, open-delta, open-delta-wye and single-phase regulators and conditions that can cause backfeed. Transformer training is required to be taken each of the three years of a line apprenticeship in order to meet degree requirements.

Required: Student Petition.

Prerequisites: APR-118UL

**APR-129PT** Basic Surface & Preparation

2 credits, Not Offered Every Term

This course continues with additional painting equipment, identifying types of surfaces, hand and mechanical cleaning of surfaces, protecting adjacent surfaces and improving surfaces to be painted. Required: Student Petition.

Prerequisites: APR-119PT

**APR-130LM** Basic Electricity I

3 credits, Fall

Explores fundamentals of AC and DC electricity. Includes: atomic structure, direct current, alternating current, Ohm's law, series, parallel, and combination circuits, DC circuit theorems, production of DC voltages, magnetic principles, transformers, motors and generators.

**APR-131LM** Basic Electricity II

3 credits, Winter

Covers application of several theories learned in previous term. Additional topics will include: motors, controls, alignment, pulleys and gears, troubleshooting theory, power distribution and lighting, electrical wiring and schematics.

Recommended Prerequisites: APR-130LM

**APR-131UE** Electric Utility System Operation (EUSO)

3 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will explain and summarize the basics of electric utility energy systems. The focus is on understanding electrical utility operations and maintenance of the power grid.

Required: Acceptance into Line Estimator Apprenticeship program

**APR-132LM Basic Electricity III**

3 credits, Spring

This course offers continued study in the control of industrial electric motors. Concepts in the application of relays, motor starters, switches and overload protection are explored from both a practical and theoretical viewpoint. Wiring techniques and electrical devices for residential, commercial and industrial facilities are presented along with hands-on activities. Additional topics include: electrical conductors, installation materials, and the scope of work performed by licensed electricians.

Recommended Prerequisites: MFG-130 and MFG-131

**APR-132UE Estimator Navigational Mapping**

3 credits, Not Offered Every Term

Principles and concepts that govern field operations. Explain and summarize the basics of electric utility energy systems. Focus is on computer applications used to manage service to customers. Required: Student Petition.

Required: Acceptance into Line Estimator Apprenticeship program

**APR-133UE Estimator Facility Point Inspection**

3 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will explain and summarize the basics of electric utility energy systems. The focus is on permits, regulation, contracts, facility point inspections and what comprises the estimator's tool box.

Required: Acceptance into Line Estimator Apprenticeship program

**APR-134UE Estimator Phase Design**

3 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will explain and summarize the basics of electric utility energy systems. The focus is on single and three phase construction projects. Required: Student Petition.

Required: Acceptance into Line Estimator Apprenticeship program

**APR-135UE Estimator Metering**

3 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will explain and summarize the basics of electric utility energy systems. The focus is on theory, tools, motors and controllers, the grid, and computer applications.

Required: Acceptance into Line Estimator Apprenticeship program

**APR-136UE Estimator Transformer Training**

3 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will explain and summarize the basics of electric utility energy systems. The focus is on beginning to end site management for residential and commercial sites.

Required: Acceptance into Line Estimator Apprenticeship program

**APR-137PB Plumbing Basic Installation & ISO**

3 credits, Not Offered Every Term

Installation practices: plumbing fixtures, valves and fittings. Blueprint Reading: lines, scale rulers, sketching, symbols, detail sketching, orthographic projection, isometric & oblique sketches.

Required: Acceptance into Plumbers Apprenticeship program

**APR-137UE Estimator Field Functions**

3 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will explain and summarize the basics of electric utility energy systems. The focus is on estimator field responsibilities and equipment used in the field.

Required: Acceptance into Line Estimator Apprenticeship program

**APR-138UL Transformer Connections III**

2 credits, Not Offered Every Term

Instruct apprentices or journey-level workers on the fundamentals of transformer bank connections: delta-delta, wye-wye, wye-delta, open-delta, open-delta-wye and single-phase regulators and conditions that can cause backfeed. Transformer training is required to be taken each of the three years of a line apprenticeship in order to meet degree requirements.

Required: Student Petition.

Prerequisites: APR-128UL

**APR-139PT Hand & Mechanical Cleaning**

2 credits, Not Offered Every Term

Preparation of painting surfaces: identifying proper process for cleaning and preparation as well as the improvement of surfaces to be painted.

Required: Student Petition.

Prerequisites: APR-119PT

**APR-147PB Plumbing Math**

3 credits, Not Offered Every Term

This course will introduce students to basic math and specifically plumbing math as well as an in depth study of job-site safety. Required: Student Petition.

**APR-149PT Basic Applications**

2 credits, Not Offered Every Term

Covers brushing & rolling paints and conventional spraying techniques, as well as special devices, and troubleshooting techniques. Required: Student Petition.

Prerequisites: APR-139PT

**APR-150ECE Introduction to Early Childhood Education & Family Studies**

4 credits, Fall

Focuses on the history of early childhood education and the prominent theorists that have significantly contributed to the field. The types of programs that serve young children, birth-age 8, and their families will be examined. State and national standards in early childhood education and family studies will be explored.

**APR-154ECE Language & Literacy Development in Young Children**

4 credits, Winter

Focuses on language and literacy development of children from birth-age 8. The research foundation and components of language and literacy development will be examined. Criteria for selecting quality children's literature will be explored. Practical strategies for promoting optimal development will be emphasized. Students will explore how to set create language and literacy-rich environments and experiences.

**APR-157PB Plumbing Pipe Sizing & Advanced Math**

3 credits, Not Offered Every Term

Learn water pipe sizing & materials, water treatment, sewage, drainage, stacks, distribution systems, cross-connection protection, hot water heater types and the related codes. Advance mathematical skills to include square roots, cube roots, offsets, area and volume calculations, and lead & oakum.

Required: Acceptance into Plumbers Apprenticeship program

**APR-159PT Basic Covering & Problem Solving**

2 credits, Not Offered Every Term

Covers more advanced brushing, rolling, spraying and application techniques, as well as wood finishing and failures and remedies related to substrates, surface preparation and application. Required: Student Petition.

Prerequisites: APR-149PT

**APR-167PB Plumbing Welding and Print Reading**

3 credits, Not Offered Every Term

Blueprint Reading: rough-in sheets, single line drawings, detail drawings and sections. Welding: Gas welding, cutting theory, soldering, brazing and cutting; flat and vertical weld and shielded metal-arc welding.  
Required: Acceptance into Plumbers Apprenticeship program

**APR-169PT Advanced Coating**

2 credits, Not Offered Every Term

Covers color & sheen of paints, special coatings, including roof and floor coatings. Required: Student Petition.  
Required: Acceptance into Painters Apprenticeship program  
Prerequisites: APR-159PT

**APR-177PB Plumbing Related Science**

3 credits, Not Offered Every Term

Installation practices: venting materials, sizing, and hangers and sewage pumps and ejectors. Related science: water properties, pressure, hydraulics, and traps; air, manometers, pressure testing and air chambers. Rigging & hoisting: safety, concepts, knots & hitches, hoists & pulleys, ladders & scaffolds, and hand signals. Required: Student Petition.  
Required: Acceptance into Plumbers Apprenticeship program  
Prerequisites: APR-167PB

**APR-187PB Plumbing Related Codes**

3 credits, Not Offered Every Term

Building Code and Mechanical Code requirements that affect plumbing installations including a review of Fire and Life-Safety Codes relative to plumbing installation. Required: Student Petition.  
Required: Acceptance into Painters Apprenticeship program

**APR-197PB Plumbing Backflow Prevention**

1 credits, Not Offered Every Term

All facets of backflow prevention and protection related to Codes and Laws. Includes clean water requirements, recognizing dangerous cross connections between potable and non-potable water systems, as well as a lab in which to demonstrate and provide hands-on opportunity for proper use of backflow devices, installation and repair and testing.  
Required: Student Petition.  
Prerequisites: APR-137PB

**APR-201MA CNC I: Set-Up and Operation**

4 credits, Not Offered Every Term

This is the first course in the CNC sequence. Students will learn basic skills including how to properly set-up and operate both CNC milling and turning centers. Students will also learn G & M codes related to basic machine set-up and operation. Designed for persons with little or no previous CNC experience.

**APR-202LM Electrical Code Level I**

4 credits, Not Offered Every Term

Provides a working knowledge of the National Electrical Code (NEC). Assists LME apprentices in preparing for the state electrical exam. Topics include definitions, requirements for electrical installations, identification and use of electrical conductors, wiring, circuit-protection, wiring methods, materials, and electrical safety standards.

**APR-202MA CNC II: Programming and Operation**

4 credits, Not Offered Every Term

This is the second course in the CNC sequence. Students will learn G&M-code programming for milling and turning while they build their set-up and operation skills. There will also be an introduction to set-up probing, 4-axis mill programming and machining, sub-programming and process documentation.

Prerequisites: APR-111MA, APR-201MA, MTH-050

**APR-203LM Electrical Code-Level II**

4 credits, Not Offered Every Term

Provides a working knowledge of the National Electrical Code (NEC). Topics include installation code requirements for the following: electrical equipment for general use such as motors, luminaries, air conditioners, cords, switchboards and panel boards. Also covers special occupancies which will assist students in locating and understanding electrical code requirements for hazardous locations such as gas stations, spray paint booths, aircraft hangars, health care facilities, places of assembly, theaters, manufactured buildings, mobile homes, temporary locations, etc. Electrical standards will be emphasized.

**APR-203MA CNC III: Applied Programming and Operation**

4 credits, Not Offered Every Term

This is the third course in the CNC sequence. Students will build their CNC programming, set-up, and operation skills. They will work individually or in small groups to design, program, manufacture, and test advanced projects using CNC mills, CNC lathes, multi-axis/process machine tools, and various software applications.

Prerequisites: APR-202MA and MTH-080

**APR-204LM Electrical Code-Level III**

4 credits, Not Offered Every Term

Provides a working knowledge of the National Electrical Code (NEC). Assists LME apprentices in preparing for the state electrical exam. Topics include special equipment, special conditions, and communications systems. Covers State of Oregon statutes and amendments, building code division rules, license requirements and responsibilities, supplemental code reference materials, safety standards and practice exams.

**APR-205PB Service Plumbing**

3 credits, Not Offered Every Term

Course will teach the plumbing apprentice basic skills required to service and repair a plumbing system. The apprentice will have an opportunity to learn methods used by a plumber to trouble shoot a plumbing system and restore it to working order. Required: Student Petition.

Prerequisites: APR-177PB

**APR-207PB Municipal Systems**

2 credits, Fall/Winter/Spring

This course introduces the student to the different municipal systems that deliver water to, and dispose of water and waste from the private plumbing systems in use today. Course content includes potable water sources, public delivery methods including gravity and pressure. In addition, wastewater collection including grease and hazardous effluent, stormwater conveyance, and disposal, as well as administration, regulation and management of public utilities are covered.

Recommended: Student must be a currently registered Plumbing Apprentice with Area I, Joint Apprenticeship Training Committee

**APR-216ED Foundations of Teaching & Education**

4 credits, Fall/Winter/Spring

Provides an overview of the educational system in the U.S. including historical, legal, and philosophical foundations of education. Explores the financing, governance and organization of education as well as current issues impacting our educational system. Provides an overview of diversity in educational settings and the characteristics and ethical obligations of effective schools and professional educators. Examines career options and pathways in the field of education.

**APR-217LE** Integrated Systems

4 credits, Not Offered Every Term

Covers the equipment used in CCTV systems, as well as the methods used to integrate these components into systems that meet the surveillance needs of different users. The course work will cover basic system components as well as specific application criteria and terminology. The student will also achieve a working knowledge of the National Electrical Code (NEC) as it applies to these technologies. Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

**APR-217PB** Advanced Plumbing Installation

3 credits, Not Offered Every Term

Plumbing theory and association skills and knowledge related to residential, commercial and industrial installation of appliances, fixture fittings and trim, gas code, piping, controls and regulators, as well as mathematics relative to elevations, leveling and transit. Required: Student Petition.

Prerequisites: APR-177PB

**APR-218LE** Fire Alarm Systems

4 credits, Not Offered Every Term

This course covers the basics of Fire Alarm systems for the Limited Energy License A and B. The class will cover the basics of National Fire Protection Association (NFPA) 72 and National Electrical Codes (NEC) 760. It will cover the different styles of circuits, wiring and devices and their components. Students will also learn system drawing and math. Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

**APR-219LE** ADA & Code

4 credits, Not Offered Every Term

Covers review of math dealing with Ohm's Law, Kershov's Law, trigonometry, voltage drop calculations and how to calculate horsepower to amperage depending on what type of electricity is being used. Also included are the newest changes in the National Electrical Code (NEC), basic Americans with Disabilities (ADA) requirements and test preparation for the Journey Level Limited Energy exam. Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

**APR-219PT** Advanced Graphics & Texturing

2 credits, Not Offered Every Term

Covers advanced techniques in graphics, glazing, antiquing, stippling, mottling, texturing and stenciling. Required: Student Petition.

Prerequisites: APR-169PT

**APR-223LM** Instrumentation & Controls

3 credits, Winter

Course instruction covers areas of process measurement, control and data acquisition. Common sensors and actuators and their applications are also presented.

Recommended Prerequisites: APR-130LM

**APR-225ECE** Prenatal, Infant & Toddler Development

3 credits, Winter

Explores the principles of child development, prenatal through three years of age. Emphasis will be placed on the physical, cognitive, and social-emotional development of young children. The impact of family dynamics, culture and socio-economic status on children's development will be explored.

**APR-227PB** Plumbing Gas Venting & Drains

3 credits, Not Offered Every Term

Introduces apprentices to the basic venting of gas appliances, mathematics to calculate offsets for plumbing systems, and cylindrical & rectangular tanks; storm drain systems and isometric drawings.

Required: Student Petition.

Prerequisites: APR-217PB

**APR-229PT** Advanced Techniques

2 credits, Not Offered Every Term

Continues with various paint texturing techniques: marbleizing, gilding, graining, lining and striping, as well as trade math & measuring, job planning and blueprint reading. Required: Student Petition.

Prerequisites: APR-219PT

**APR-231UE** Line Estimator Responsibility I: Live Line

4 credits, Not Offered Every Term

This course covers the principles and concepts that govern field responsibilities related to line maintenance. The focus is on ground resistance, pole replacement and live line maintenance, fiber optic types, and codes and standards for installation procedures. Required: Student Petition.

Required: Acceptance into Line Estimator Apprenticeship program

**APR-231UL** Outside Electrical Advanced Theory I

5 credits, Fall

Instruct third year, first term apprentices on outside electrical apprenticeship training as it applies to distribution circuits and capacitors, inductance, AC theory, transformers single and three phase voltages and connections, troubleshooting and testing, personal protective grounding, National Electric Safety Code (NESC) standards, and safe work practices. Required: Student Petition.

Required: Second-year outside electrical theory

**APR-231UM** Metering: Advanced I

5 credits, Fall

This course will instruct third-year apprentices on the subject of advanced metering including the following: history of metering (past, present, and future), review of meter vectoring, polyphase vectoring, self-contained meters, instrument rated meters, instrument transformers (current and voltage) and their application. Required: Student Petition.

Prerequisites: APR-123UM

**APR-231UW** Advanced Substation Wireman I

5 credits, Fall

Advanced Substation Wireman I students will learn about local union by-laws, worker benefits, and labor management relations and their responsibilities as a journey-level worker. Also non-standard equipment such as static volt-ampere reactive (VAR) compensators, gas insulation stations. Additional topics include System Control and Data Acquisition (SCADA), and alternative energy sources. This course is part of the NJATC substation curriculum. Required: Student Petition.

Prerequisites: APR-123UW

**APR-232UE** Line Estimator Responsibility II: Substation

4 credits, Not Offered Every Term

This course covers the principles and concepts that govern field responsibilities related to substation line maintenance. The focus is on voltage regulation, circuit protection, high voltage fuses, air break switches, transformers, and related safety issues and procedures. Required: Student Petition.

Required: Acceptance into Line Estimator Apprenticeship program



**APR-232UL** Outside Electrical Advanced Theory II

5 credits, Winter

Instruct third year, second term apprentices on outside electrical apprenticeship training as it applies to distribution capacitors, capacitor switching, breakers and switches, rubber protective devices, live-line tools, live-line work practices, primary and single-phase revenue metering, substation safety procedures, substation construction and advanced math applications. Required: Student Petition.

Required: Second-year outside electrical theory

Prerequisites: APR-231UL

**APR-232UM** Metering: Advanced II

5 credits, Winter

Designed to instruct third-year apprentices on the subject of advanced fundamentals of metering including the following: rates and tariffs, demand metering, Kilovolt-Ampere-Reactance (KVAR) and Kilovolt Amps (KVA) metering, special metering (compensation metering, bidirectional flow (net metering), and totalization, pulse metering (pulse weights, pulse initiation, and totalization). Required: Student Petition.

Prerequisites: APR-231UM

**APR-232UW** Advanced Circuit Theory & Troubleshooting I

5 credits, Winter

This course is designed to instruct third year wireman students on the advanced theory and application of outside electrical substation related training as it applies to a working understanding of algebra, electron theory and all aspects of AC & DC electric circuit evaluation, reading substation construction prints, National Electric Code (NEC) codes for construction and safe work practices. Required: Student Petition.

Prerequisites: APR-231UW

**APR-233UE** Line Estimator Responsibility III: Field Responsibility

4 credits, Not Offered Every Term

This course covers the principles and concepts that govern field responsibilities related to line maintenance. The focus is on hot stick procedures, installing substation control equipment, locating cable faults, power factor, harmonics and functions of control equipment.

Required: Acceptance into Line Estimator Apprenticeship program

**APR-233UL** Outside Electrical Advanced Theory III

5 credits, Spring

Instruct third year, third term apprentices on outside electrical apprenticeship training as it applies to primary fusing and fuse principles, reclosers and sectionalizers, substation equipment, line fault current and voltage regulation, capacitors, power factor/harmonics, fiber optics including: fiber type, cable type, codes and standards, aerial construction, and underground construction, alternative energy sources and journeymen responsibilities. Required: Student Petition.

Required: Second-year outside electrical theory

Prerequisites: APR-232UL

**APR-233UM** Metering: Advanced III

5 credits, Spring

This course is designed to instruct third-year apprentices on the subject of advanced fundamentals of metering including the following: meter software programs (error codes, service test editing, interpretation of instrumentation vectors, interval data, and programming), meter communications, general system troubleshooting, power quality and harmonics, Automated Meter Infrastructure (AMI)/Automated Meter Reading (AMR) and the Smart Grid. Required: Student Petition.

Prerequisites: APR-232UM

**APR-233UW** Advanced Circuit Theory & Troubleshooting II

5 credits, Spring

This course is designed to instruct third-year wireman students on the advanced theory and application of outside electrical substation related training as it applies to a working understanding of algebra, electron theory and all aspects of AC & DC electric circuit evaluation, reading substation construction prints, National Electric Code (NEC) codes for construction and safe work practices. Required: Student Petition.

Prerequisites: APR-232UW

**APR-235ECE** Safety, Health and Nutrition

3 credits, Fall

Explores safety, health and nutrition issues for children ages infant through preschool. Focus includes creating safe indoor and outdoor environments, healthy lifestyle practices, caring for children with special healthcare needs, USDA food program requirements, and state guidelines around safety, health and nutrition requirements.

**APR-237PB** Plumbing Water Heater & Circuit Controls

3 credits, Not Offered Every Term

Plumbing concepts relative to energy, temperature, and heat transfer via conduction, convection, and radiation in gas, oil, electric and solar water heaters. Included are water treatment, basic motors & controls, circuit protection, and troubleshooting. Blueprint reading segment covers specifications, floor, site, structural, plumbing, electrical and HVAC plans.

Required: Student Petition.

Prerequisites: APR-227PB

**APR-239PT** Advanced Estimating & Codes

2 credits, Not Offered Every Term

This course covers surface preparation, materials, adhesives and installation of wall covering, as well as potential failures and remedies during the wallcovering process. Also included are wallcovering math & measurement, as well as job planning techniques. Required: Student Petition.

Prerequisites: APR-229PT

**APR-240ECE** Environments and Curriculum Planning

4 credits, Spring

Focuses on an introduction of creating learning environments and curriculum for children from three years old through five years old in home or center-based programs. Course covers theories and relationships between physical and social space, activities, experiences, and materials. Students are introduced to the use of developmentally and culturally appropriate practices in planning and selecting environments and curriculum for young children.

**APR-247ECE** Preschool Through Adolescent Child Development

3 credits, Spring

This course focuses on principles of development in children three years old through adolescence, including physical, cognitive, language, and social and emotional growth. Explores major historical theories of child development and current research and practices. A focus on how culture, family dynamics, and socio-economic status impact growth and development are included.

Prerequisites: APR-225ECE

**APR-247PB** Advanced Plumbing Code I

3 credits, Not Offered Every Term

This course is designed to prepare the apprentice for the plumbing journeyman exam. It introduces the Uniform Plumbing Code and covers additional plumbing laws and rules. The student will work with the plumbing code book to learn definitions and general regulations, acceptable methods and materials for plumbing installations and will prepare for the State plumbing examination. Required: Student Petition. Required: Successful completion of 1st, 2nd, and 3rd years of Plumbing related training

**APR-254MA** Mill/Turn Machining

3 credits, Not Offered Every Term

This class will introduce students to CNC mill-turn machines, their programming, and setup procedures. The course will explore limitations, advantages, and configurations of typical mill/turn machines including rotation style and set-up orientation. Post processing and virtual machine simulation will also be discussed.

Prerequisites: APR-203MA

**APR-257PB** Advanced Plumbing Code II

3 credits, Not Offered Every Term

This course is designed to prepare the apprentice for the plumbing journeyman exam. It is a continuation of Advanced Plumbing Code I, and covers additional plumbing codes, analysis of definitions, plumbing theory and design, and vents, traps, and storm drain systems. Medical Gas installation will be reviewed. Required: Student Petition.

Prerequisites: APR-247PB

**APR-258ED** Culturally Responsive Teaching & Education

3 credits, Spring

Explores historical and systemic inequities in U.S. society and how they impact students, schools, and communities. Provides an overview of the ways in which educators can select culturally appropriate pedagogy, materials, and curriculum in order to serve the needs of an increasingly diverse U.S. educational system. Applies this knowledge in creating classrooms and schools where all students, families, and communities are valued, belong, and thrive.

**APR-267PB** Advanced Plumbing Code III

3 credits, Not Offered Every Term

This course is designed to prepare the apprentice for the plumbing journeyman exam. It is a continuation of Advanced Plumbing Code II, and covers additional plumbing codes, analysis of definitions, plumbing theory and design, advanced preparation for the State Journeyman Plumber's Exam, and overview of the entire code book. Required: Student Petition.

Prerequisites: APR-257PB

**APR-276PB** Plumbing Review I

3 credits, Not Offered Every Term

This course is designed to prepare the apprentice for the plumbing journeyman exam. It is the first of three Advanced Plumbing Code classes and covers additional plumbing codes, analysis of definitions, plumbing theory and design, advanced preparation for the State Journeyman's Plumbers exam and overview of the entire code book. Required: Student Petition.

Required: Successful completion of 1st, 2nd, and 3rd years of Plumbing related training

**APR-277PB** Plumbing Review II

3 credits, Not Offered Every Term

This course is the second of three classes designed to provide the fourth year apprentice with a computer-assisted overview of previous courses and an opportunity to explore advanced plumbing topics. Required: Student Petition.

Prerequisites: APR-267PB

**APR-287PB** Plumbing Review III

3 credits, Not Offered Every Term

This course is the last of three classes designed to provide the fourth year apprentice with a computer-assisted overview of previous courses and an opportunity to explore advanced plumbing topics. Required: Student Petition.

Prerequisites: APR-277PB

## Art (ART)

**ART-100A** Jewelry Making Techniques

1 credits, Not Offered Every Term

Various topics will introduce techniques in: construction, forming, fabrication, soldering, inlay, etching, mold making, casting, stone setting, chain making and silversmithing. Students will be encouraged to create and design their own jewelry with both meaning and function. Historical and contemporary issues surrounding jewelry and body adornment will be presented and discussed during the course. May be repeated for up to 3 credits.

**ART-101** Art Appreciation

3 credits, Fall/Winter/Spring

Discover the fundamentals of thinking about and creating art through readings, class discussions, and gallery/museum tours. This course will examine art, architecture and design from the ancient period through the contemporary moment. The course also considers connections and relationships in art-making, history and culture.

**ART-115** Basic Design: 2-Dimensional Design

4 credits, Fall/Winter/Spring

This course acquaints students with the vocabulary of composition and the elements and principles of design and color theory. Students focus on the development of creative compositions and analytical skills through projects and critiques and examine historical and contemporary issues and ideas related to visual composition.

**ART-117** Basic Design: 3-Dimensional Composition

4 credits, Spring

Examine the elements of form, space, structure, and sculpture. Create works of art using various sculptural processes. Examine historical and contemporary issues and ideas relating to sculpture and 3-dimensional design.

**ART-119** Time-Based Art

4 credits, Winter

This course introduces students to working with time as a medium, concept, and process. Introduces the strategies, practices, and history of the time-based art including storytelling, performance, body art, animation, video, and sound. Students develop abilities in producing, documenting, and presenting these works.



**ART-120 Creativity/Ideation**

2 credits, Not Offered Every Term

Have a great idea, want to further explore your ideas and creativity? Experience the process of generating ideas and developing creative problem-solving strategies. This course includes experimentation, collaboration, non-traditional methods and psychological aspects of creating and synthesizing ideas. This course is not just for artists, it is for everyone who wants to develop an idea.

**ART-121 Digital Tools**

2 credits, Winter

An introductory course exploring digital systems used by artists and designers to create, see, process and communicate in a quickly changing world. Students will use phone and computer technologies to research ideas and create work related to the self, the world, spaces and places. They will also use technology to develop a personal aesthetic and art practice. Digital experience related to art practice and the world around us will be considered. Projects and critiques will introduce students to cultural themes and principles of design.

**ART-131 Introduction to Drawing**

4 credits, Fall/Winter/Spring

Introduces basic skills, drawing tools, materials, techniques, elements of composition; line, gesture, color and value. Projects will involve observational drawing of figure, still life and landscape images. Assignments include drawing, assigned readings, term papers and group critiques of drawing projects. Historical issues of drawing will be examined.

**ART-161 Photography I**

4 credits, Fall/Winter/Spring

Introduction to basic camera operation and basic darkroom processes in developing and printing film. Elements of composition, content, and historical reference will be explored.

Required: Access to a 35mm black and white camera with adjustable exposure controls (no digital cameras)

**ART-162 Photography II**

4 credits, Spring

This course is the second of a sequence of three darkroom photography courses. This course explores camera operation and darkroom processes in developing and printing film. Photography II explores the photo processes and elements of composition, content, and historical/contemporary references at an intermediate level.

Required: Access to a 35mm black and white camera with adjustable exposure controls (no digital cameras)

Prerequisites: ART-161

**ART-197 Gallery Design & Management**

3 credits, Not Offered Every Term

Introduction to the fundamental goals and methodology of managing a visual arts gallery. This course examines issues of contemporary art while providing practical experience in curating, preparation and installation of exhibitions, fund raising, grant writing, public relations and related gallery objectives.

**ART-204 History of Art/Ancient Through Medieval**

4 credits, Fall

Examines art, cultures, and history from the Paleolithic era through the early Medieval eras. This is a broad overview of art history that promotes an understanding of art and its history through readings, lectures, papers and exams.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ART-205 History of Art/Romanesque Through Baroque**

4 credits, Winter

Examines art, culture, and history from the Romanesque through the Baroque periods in art. This is a broad overview of art history that promotes an understanding of art and its history through readings, lectures, discussions, papers and exams.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ART-206 History of Art/Enlightenment Through Contemporary**

4 credits, Spring

Examines art, culture, and history from the Enlightenment through the current century. This is a broad overview of art history that promotes an understanding of art and its history through readings, lectures, papers and exams.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ART-225 Computer Graphics I**

4 credits, Fall/Winter

Introduction to the use of digital graphics programs. Photo manipulation, illustration, and compositing techniques will be explored. Design principles and creative composition will be emphasized. Historical and contemporary issues related to graphic design aesthetics will be considered.

Recommended Prerequisites: ART-115

**ART-226 Computer Graphics II**

4 credits, Spring

Continue exploring the processes of digital graphics programs. More advanced aspects of image compositing, bit mapping, layering, and using channels in Photoshop. More advanced aspects of vector graphics creation and document creation in Illustrator and InDesign. Creative problem solving, design applications and contemporary issues will be explored. Historical reference and current trends in digital media will continue to be examined.

Prerequisites: ART-225

**ART-227 Computer Graphics III**

4 credits, Spring

Advanced use of multi-digital formats to create images, compositions and documents. Develop a design portfolio. Design principles, creative problem solving, historical and contemporary issues in graphics and aesthetics will be analyzed.

Prerequisites: ART-226

**ART-232 Life Drawing (Figure Emphasis)**

4 credits, Winter

Develop drawing skills, tools, materials, techniques, elements of composition; line, gesture, and value. Direct observation of reality in relation to volume and form drawn onto a two-dimensional plane with a focus on the human form. Assignments include drawing, assigned readings and group critiques of drawing projects.

Prerequisites: ART-131 or Student Petition

**ART-233 Drawing for Comics**

4 credits, Spring

Introduces basic drawing skills, drawing tools, materials, techniques, elements of composition; line, gesture, color and value. Projects will involve drawing with a focus on sequential imagery, comics and graphic style. Assignments include drawing, assigned readings and group critiques of drawing projects. This course emphasizes composition, expression and text-related imagery.

Prerequisites: ART-131 or Student Petition

**ART-241 Digital Tools II**

2 credits, Not Offered Every Year

This course continues creative exploration of digital systems that are used by artists and designers to create, see, process, and communicate in a quickly changing world. Students will expand their use of phone and computer technologies to research specific topics and create work-related that considers the self, the world, spaces, and places. They will also use various technologies (i.e., Unreal, Adobe Creative Suite) to develop work related to specific themes. Digital experience related to art practice and the world around us will also be considered. Projects and critiques will engage students with cultural themes and design concepts. Prerequisites: ART-121

**ART-250 Ceramics/Beginning**

4 credits, Fall/Winter/Spring

This course is a broad general introduction to fundamental ceramic skills and clay experience to foster artistic growth. Students explore different methods of working with clay, including pinching, coiling, slab construction, and throwing on the wheel and are introduced to glazing and firing methods. Students research the history of ceramics and its connection to culture and society.

**ART-251 Ceramics/Hand-Building I**

4 credits, Not Offered Every Term

This course is a hand-building focused introduction to fundamental ceramic skills and clay experience to foster artistic growth. Students explore different methods of working with clay, including pinching, coiling, and slab construction and are introduced to glazing and firing methods. Students research the history of ceramics and its connection to culture and society.

**ART-252 Ceramics/Wheel-Throwing I**

4 credits, Winter/Spring

This course is an introduction to ceramic wheel-throwing methods through the creation of functional and artistic forms to develop fundamental skills and clay experience and foster artistic growth. Students are introduced to glazing and firing methods. Students research the history of ceramics and its connection to culture and society.

**ART-253 Ceramics/Intermediate**

4 credits, Fall/Winter/Spring

In this course, students further develop ceramic skills and clay experience to foster artistic growth. Students explore and develop different methods of working with clay, including pinching, coiling, slab construction, and throwing on the wheel and refine glazing and firing methods. Students research the history of ceramics and its connection to culture and society.

Prerequisites: ART-250, ART-251, or ART-252, or Student Petition

**ART-254 Ceramics/Hand-Building II**

4 credits, Not Offered Every Term

This course continues the development of ceramic hand-building methods through the creation of functional and artistic forms to develop skills and clay experience and foster artistic growth. Students explore glazing and firing methods. Students research the history of ceramics and its connection to culture and society.

Prerequisites: ART-251 or Student Petition

**ART-255 Ceramics/Wheel-Throwing II**

4 credits, Winter/Spring

This course continues the development of ceramic wheel-throwing methods through the creation of functional and artistic forms to develop skills and clay experience and foster artistic growth. Students explore glazing and firing methods. Students research the history of ceramics and its connection to culture and society.

Prerequisites: ART-252 or Student Petition

**ART-257 Metalsmithing/Jewelry**

4 credits, Not Offered Every Term

This course examines basic techniques in metalsmithing and jewelry-making. Students will learn basic techniques and processes of metalsmithing such as sawing, cold connection, soldering, metal inlay, fabrication, forming, surface treatments and casting. The focus of this class will be placed on creating forms for body adornment. Critiques, discussions and presentations are included in this course.

**ART-261 Photography III**

4 credits, Not Offered Every Term

This course is the third of a sequence of three darkroom photography courses. This course explores camera operation and darkroom processes in developing and printing film. Photography III explores the photo processes and elements of composition, content, and historical/contemporary references at an advanced level.

Required: Access to a 35mm black and white camera with adjustable exposure controls (no digital cameras)

Prerequisites: ART-161 and ART-162

**ART-262 Digital Photography & Photo-Imaging**

4 credits, Fall/Winter/Spring

Introduces concepts, techniques, practices, aesthetics and ethics of photographic imaging and image-making with digital technology. Students will use imaging software.

Required: Access to a digital camera with adjustable exposure controls

**ART-280 Art/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of art. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

**ART-281 Painting: Still Life/Beginning**

4 credits, Fall

Introduces basic painting tools, materials, techniques, and elements of composition, color, gesture, and value. Projects will involve observational painting with a focus on Still Life and its relationship to volume and form on a two-dimensional plane. Assignments include painting, drawing, assigned readings and group critiques of painting projects.

**ART-282 Painting: The Figure/Beginning**

4 credits, Winter

Introduces basic painting tools, materials, techniques, and elements of composition, color, gesture, and value. Direct observation of reality in relation to volume and form on a two-dimensional plane with a focus on the human form. Assignments include painting, readings and critique of projects.

**ART-283 Painting: Landscapes/Beginning**

4 credits, Spring

Introduces basic painting tools, materials, techniques, and elements of composition, color, gesture, and value. Projects will involve observational painting with a focus on landscape and its relationship to volume and form on a two-dimensional plane. Assignments include painting, drawing, assigned readings and group critiques of painting projects.

**ART-284** Painting: Still Life/Intermediate

4 credits, Fall

Utilizes intermediate painting concepts, materials and techniques, with emphasis on composition, color, gesture, and value. Projects will involve observational painting with a focus on Still Life and its relationship to volume and form on a two-dimensional plane. Assignments include paintings, readings, and critique of projects.

Prerequisites: ART-283 or Student Petition

**ART-285** Painting: The Figure/Intermediate

4 credits, Winter

Utilizes intermediate painting concepts, materials and techniques with emphasis on composition, color, gesture and value. Projects will involve observational painting with a focus on the human form and its relationship to volume and form on a two-dimensional plane. Assignments include paintings, readings, and critique of projects.

Prerequisites: ART-283 or Student Petition

**ART-286** Painting: Landscapes/Intermediate

4 credits, Spring

Utilizes intermediate painting concepts, materials and techniques with emphasis on composition, color, gesture and value. Projects will involve observational painting with a focus on landscape and its relationship to volume and form on a two-dimensional plane. Assignments include painting, drawing, assigned readings and group critiques of painting projects.

Prerequisites: ART-283 or Student Petition

**ART-291** Sculpture

4 credits, Fall

Introduction to the processes and concepts of sculpture; the elements of form and space will be explored. Clay, plaster, mold making, carving, and assemblage will be introduced. Reference to historical and aesthetic content will be presented.

**ART-292** Sculpture (Figure Emphasis)

4 credits, Winter

Explores the human form in traditional and contemporary techniques and concepts. Use of clay, armatures, combining mediums, flexible molds and other sculpture media will be explored. Concepts of aesthetics in formal composition will be explored through projects, lectures, and critiques.

The human figure and other life forms in the history of sculpture will be examined.

**ART-293** Sculpture (Metal Emphasis)

4 credits, Spring

The processes and concepts of sculpture including the elements of form, space and visual communication will be examined with emphasis on current issues. Use of clay and plaster in relation to metal sculpture. Welding, casting, and assemblage will be explored. Historical and contemporary ideas and aesthetic content will be examined.

**ART-297** Professional Practices and Artist's Skills

3 credits, Not Offered Every Term

Professional practices relevant to emerging artists' careers. Format includes resume and portfolio preparation, developing resources and community connections, gaining exposure and representation for artwork, creating publicity, basic marketing and exhibition strategies, presenting and exhibiting work, business concerns, art market dynamics, guest lecturers and visiting artists, methods of art collecting with additional field trips to local galleries and professional artist studios.

Recommended Prerequisites: WR-121Z

## Arts & Sciences (ASC)

**ASC-175** Integrated Science Inquiry

4 credits, Fall

An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrated themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included: Evolution: the Idea that Shocked the World, the People and Animals of Africa, and the Lewis and Clark Expedition.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

Corequisites: ASC-175L

**ASC-176** Integrated Science Inquiry

4 credits, Winter

An introductory lab science course for liberal arts majors in science through the use of integrated themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included Human Evolution, Diseases of Africa and the Lewis and Clark Expedition.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

Corequisites: ASC-176L

**ASC-177** Integrated Science Inquiry

4 credits, Fall

An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrated themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included Evolution & Contemporary Issues, Diseases of Africa, and the Lewis and Clark Expedition.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

Corequisites: ASC-177L

## Auto Body/Collision Refinishing (ABR)

**ABR-125** Collision Repair/Refinishing I

6 credits, Fall/Winter/Spring

Covers shop safety, fire prevention, selection and use of paint products, abrasives, fillers, basic application of primers, sealers, and top coats.

Prerequisite or Corequisite: AB-112 and AB-113

**ABR-127** Collision Repair/Refinishing II

6 credits, Fall/Winter/Spring

Application of solvent and waterborne finishes, including spot repairs, color matching, complete refinishing, and problem solving. Introduction to computerized color information retrieval and mixing.

Prerequisites: ABR-125

**ABR-129** Collision Repair/Refinishing III

6 credits, Fall/Winter/Spring

Application of solvent and waterborne basecoats and tri-coats and urethane topcoats, using both foreign and domestic refinish systems. Includes complete refinishing, spot and panel painting, color matching and problem solving.

Prerequisites: ABR-127

**ABR-225** Production Shop Techniques

6 credits, Fall/Winter/Spring

Designed for students who wish to gain additional hands-on experience in refinishing, using the most up-to-date methods and materials.

Prerequisites: ABR-129

**ABR-227** Restoration Practices

6 credits, Fall/Winter/Spring

Designed for students who wish to broaden their skills base in the upper end refinish market. Projects will be considerably more challenging, with standards and expectations set higher.

Prerequisites: ABR-225

## Auto Body/Collision Repair (AB)

**AB-101** Auto Restoration

3 credits, Fall/Winter/Spring/Summer

Designed for students interested in auto body repair and painting their own vehicles. Includes dent removal, panel replacement, welding and painting. May be repeated for up to 12 credits.

**AB-105** Street Rod Construction Techniques

3 credits, Fall/Winter/Spring/Summer

In this course, students will learn panel forming, welding, basic body work and repair of individual projects. Includes shop safety, chemical hazard safety, proper and safe use of tools, basic metal work and finishing, and paint preparation and application.

**AB-112** Collision Repair Welding I

2 credits, Fall/Winter/Spring

This class focuses on auto collision damage repair. Emphasis is on Metal Inert Gas (MIG), Gas Metal Arc Welding (GMAW), welding on light gauge metals, and oxygen-acetylene cutting.

**AB-113** Collision Repair I/Nonstructural

6 credits, Fall/Winter/Spring

Provides basic instruction in collision repairs, including shop safety and chemical hazard safety; proper and safe use of tools; basic metal work and finishing; use of filler; door removal, replacement and alignment; and replacement and alignment of bolt-on front end sheet metal parts.

Prerequisite or Corequisite: AB-112 and ABR-125

**AB-123** Collision Repair Welding II

2 credits, Fall/Winter/Spring

Training in light gauge metal repair. Gas Metal Arc Welding (GMAW), Plasma Arc Cutting (PAC), Squeeze Type Resistance Spot Welding (STRSW), and other advanced welding techniques specific to collision damage repair.

Prerequisites: AB-112

**AB-133** Collision Repair II/Structural

6 credits, Fall/Winter/Spring

Repair major body damage using modern frame repair equipment. Includes repair and replacement of bolt-on, bonded, and welded components using the latest technology. Includes introduction to computerized measuring and damage analysis.

Prerequisites: AB-113

**AB-149** Collision Repair Estimating I

2 credits, Fall

This course provides instruction in procedure and terminology used in the collision repair estimating field. Body part component identification and the effects of a collision on a vehicle will be studied.

**AB-150** Collision Repair Computerized Estimating - Audatex

2 credits, Winter

Provides detailed instruction in the use of modern computerized estimating systems in the collision repair field. Focus is on Audatex software.

Prerequisites: AB-149

**AB-151** Collision Repair Computerized Estimating - CCC ONE

2 credits, Spring

Provides detailed instruction in the use of modern computerized estimating systems in the collision repair field. Focus is on CCC ONE software.

Prerequisites: AB-149

**AB-222** Collision Repair III/Advanced Structural

6 credits, Fall/Winter/Spring

Major collision repair with a systems approach: frame and structure, panels, suspension and brakes, electrical and cooling systems. Emphasis on frame and unibody repair, replacement of welded body panels, and diagnosis and repair of related damage.

Prerequisites: AB-133

**AB-224** Collision Repair IV/Advanced Structural

6 credits, Fall/Winter/Spring

Advanced frame and Unibody repair procedures. Electronic measurement and dimensioning, repair documentation, brakes, suspension, and alignment as they relate to collision repair.

Prerequisites: AB-222

**AB-226** Collision Repair V/Advanced Structural

6 credits, Fall/Winter/Spring

Uses the latest high quality, productive techniques and equipment to repair vehicles to pre-collision condition. Covers the refined collision repair processes for today's workplace.

Prerequisites: AB-224

**AB-235** Collision Repair Welding III

2 credits, Fall/Winter/Spring

Aluminum welding for collision damage repair. Gas Metal Arc Welding (GMAW) and Gas Tungsten Arc Welding (GTAW) processes are learned, along with related weld techniques and equipment/safety procedures.

Prerequisites: AB-123

**AB-280** Collision Repair/CWE

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Work-based learning experience in an auto body repair shop. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

## Automotive Service Technology (AM)

**AM-100** Automotive Fundamentals

4 credits, Fall/Winter/Spring

An introductory automotive service class intended to provide fundamental knowledge and basic experience about automobiles.

The course covers automotive systems, preventive maintenance and performing basic repairs. Also covered in the course is SP2 safety and pollution prevention training, communication skills, tool identification and general automotive maintenance and repair.



**AM-101** Intro to Automotive Service Technology

2 credits, Fall/Winter/Spring

Introduction to Automotive Service Technology is a course that will prepare students for success in the Automotive Service Technology Program. Shop orientation and automotive industry safety training will be provided. Students can earn industry-recognized certificates. Students will be exposed to industry-recognized online service information. Students will also be introduced to tasks that align with the Auto Service Excellence Education Foundation (ASEEF) Master Automotive Service Technician (MAST) program accreditation.

Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090

Corequisites: AM-129, AM-130, AM-131, AM-133, AM-135, or AM-142

**AM-106** Fix Your Own Car

2 credits, Not Offered Every Term

A do-it-yourself course for students who want to work on their own cars. Includes: oil change, lubrication, fluid checks, brakes, cooling system, electrical system, safety, and other quick services. May be repeated for up to 12 credits.

**AM-116** Remote Control Vehicle Fundamentals

4 credits, Fall/Winter/Spring

This course is intended to provide an exploration into mechanical and electrical systems found on 1/10 scale electrically propelled trucks. Students will have classroom instruction to cover operation of suspension systems, drive train systems, gear reductions, battery construction, battery maintenance and charging, electric motor operation, maintenance and repair. Students will disassemble, categorize and organize all parts and re-assemble a remote-controlled vehicle throughout the term. Students will test and operate their remote vehicle on a controlled course with successful completion of class assignments.

**AM-118** Small Engine Repair

4 credits, Fall/Winter/Spring

This course is designed to provide an overview of basic small engine maintenance, operation and repair. It covers safety, small engine theory, electrical systems, and troubleshooting. Classroom instruction covering theory of operation, 2 cycle and 4 cycle designs and applications, combined with hands-on live projects provides the student the opportunity to learn basic principles of small engine operation, including outdoor equipment, motorcycles, and A.T.V.'s.

**AM-129** Electrical Systems I

5 credits, Fall

This course is designed to provide students with the entry-level skills necessary to repair automobile electrical systems. Students will learn about general electrical systems diagnosis; servicing and repair of batteries, starting systems, and charging systems.

Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090

**AM-130** Brake Systems

5 credits, Fall

In this theory and lab course students will learn about the construction and operation of basic hydraulics, brake fluids, friction materials, seals, disc and drum brakes, hydraulic and vacuum brake boosters systems. Students will also learn to service and repair automotive brake systems.

Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090

**AM-131** Suspension Systems

5 credits, Winter

In this theory and lab course, students will learn the design, construction, service, and repair of front and rear suspension systems, wheels and tires, steering systems, and alignments. Students will service and repair these systems in the hands-on lab.

Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090

**AM-133** Engine Systems

5 credits, Winter

This course is designed to provide students with the entry-level skills necessary to repair automobile engines. Includes general engine diagnosis; cylinder head and valve train diagnosis and repair; engine block assembly diagnosis and repair; and lubrication and cooling systems diagnosis and repair.

Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090

**AM-135** Power Transmission Systems

5 credits, Spring

In this course students will learn the construction, operation, service and repair of clutches, manual transmission, U-joints, drive lines, final drives, overdrive, and four wheel drives.

Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090

**AM-142** Engine Performance I

5 credits, Spring

This course is designed to provide students with the entry-level skills necessary to repair automobile fuel delivery and emission systems. Includes general engine diagnosis; fuel, air induction, and exhaust systems diagnosis and repair; emission control systems diagnosis and repair. Introduction to the diagnostic process, scan tools, and oscilloscopes.

Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090

**AM-201** Automotive Internship

3 credits, Fall

Students will be completing a portfolio project to present to companies in the automotive industry. Students will learn best practices for interview preparedness and resume development. There will be a scheduled interview day with partners in industry to help place students in the workforce for internship. Students will prepare for Auto Service Excellence (ASE) certification tests.

Prerequisites: AM-101

**AM-223** Alternative Fuels Transportation Technology

5 credits, Spring

Provides students with knowledge of theory and physical description of hybrid, Electric, Fuel cell vehicles. The student will have the opportunity to acquire practical experience in the area of diagnosing and repairing alternative fuel transportation vehicles.

Prerequisites: AM-129

**AM-224** Comfort Systems

5 credits, Fall

In this course, students will learn design, construction, testing, maintenance, and repair of automotive heating and air conditioning systems. Prepares a student to take the Section 609 Environmental Protection Agency certification test.

Prerequisites: AM-129

**AM-225 Safety Systems**

5 credits, Spring

In this course students will be introduced to existing vehicle on-board safety systems and Advanced Driver Assist Systems (ADAS) on today's vehicles. Safety systems such as Anti-lock brakes, Traction control, Air-bag systems, Stability control, and Advanced Driver Assist Systems will be explained, demonstrated, and tested.

Prerequisites: AM-129

**AM-228 Service Shop Management**

4 credits, Spring

Course designed to familiarize students with the responsibilities of the parts manager, service manager and service writer and the day to day responsibilities of operating a business.

Prerequisites: MTH-020 with a C or better, or placement in MTH-050 or higher

**AM-229 Electrical Systems II**

5 credits, Fall

In this course students will learn fundamentals of electronics, diagnosis, and repair of general electrical including, lighting systems, instrument cluster and driver information systems, and body electrical systems.

Prerequisites: AM-129

**AM-242 Engine Performance II**

5 credits, Winter

This course is the second of two engine performance courses. In this course the students will receive training in advanced lab scope diagnostics, advanced level scan tool usage, power train reprogramming and the opportunity to do real world diagnostics. On board diagnostics 2 (OBD2) readiness monitors and how they work will be discussed. Training and practical application of all monitored systems of the OBD2 system will be performed.

Prerequisites: AM-142

**AM-245 Automatic Transmission Systems**

5 credits, Winter

This course covers the theory and physical description of the automatic transmission. The student will have the opportunity to acquire practical experience and learn the proper procedures for overhaul, service, and diagnosis of an automatic transmission.

Prerequisites: AM-129

**AM-280 Auto Mechanics/CWE**

1-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Work-related learning experience in an auto repair shop or auto dealership. Variable Credit: 1-6 credits. Required: Student Petition.

Corequisites: CWE-281

## Biology (BI)

**BI-101 General Biology; Cellular Biology**

4 credits, Fall/Winter/Spring/Summer

An inquiry-based laboratory course focusing on cellular biology, genetics, epigenetics, biotechnology and natural selection. Class uses student centered activities in a collaborative learning environment to enhance appreciation of the biological world.

Recommended Prerequisites: MTH-060 or MTH-098 or placement in MTH-065; and WRD-098 or placement in WR-121Z

Corequisites: BI-101L

**BI-102 General Biology; Animal Systems**

4 credits, Fall/Winter/Spring/Summer

An inquiry-based laboratory course focusing on human and animal body systems; including teratogens, Hox genes and hormone mimics in embryonic development. Activities emphasize comparisons across animal phyla to better understand the diversity of life. The class uses student centered activities in a collaborative learning environment to enhance appreciation of the animal kingdom.

Recommended Prerequisites: MTH-060 or MTH-098 or placement in MTH-065; and WRD-098 or placement in WR-121Z

Corequisites: BI-102L

**BI-103 General Biology; Plants & The Ecosystem**

4 credits, Summer/Fall/Spring

An inquiry-based laboratory course focusing on plants and the ecosystem; including plant identification, population dynamics, productivity and energy flow. Activities include an integrated approach to understanding environmental issues and the impact of humans on the biosphere. The class uses student centered activities in a collaborative learning environment to enhance appreciation of the biological world.

Recommended Prerequisites: MTH-060 or MTH-098 or placement in MTH-065; and WRD-098 or placement in WR-121Z

Corequisites: BI-103L

**BI-112 General Biology for Health Sciences**

4 credits, Fall/Winter/Spring/Summer

A one-term preparatory course that introduces the Health Occupations student to the scientific method, molecular and cellular biology, principles of inheritance, homeostasis, natural selection, tissues, and organ systems. Topics and skills covered prepare students to enter BI-231 and BI-234.

Recommended Prerequisites: MTH-060 or MTH-098 or placement in MTH-065, and WRD-098 or placement in WR-121Z

Recommended Corequisite: CH-112

Corequisites: BI-112L

**BI-120 Introduction to Human Anatomy and Physiology**

4 credits, Fall/Winter/Spring

This course is designed to serve students as an overview introductory course to human anatomy and physiology. Material covered includes the structure and function of the human body. Basic chemistry and cell structures are covered, as well as the organization of tissues, organs, and organ systems. Correlations can then be made between this material and disease states commonly encountered in health care. Dissection of animal tissues is required.

Corequisites: BI-120L

**BI-160 Bird Identification & Taxonomy**

3 credits, Not Offered Every Year

Lecture course introducing bird taxonomy, evolution, anatomy and physiology, identification, and behaviors. Identification techniques applied to regional birds through lectures, slides and other activities.

**BI-160L Bird Identification & Taxonomy with Lab**

4 credits, Not Offered Every Year

Lecture course introducing bird taxonomy, evolution, anatomy and physiology, identification, and behaviors. Identification techniques applied to regional birds through lectures, slides and other activities. Includes field identification of common Oregon birds by sight, sound, and habitat. Field trips required along with online research.



**BI-163** Malheur Field Trip

1 credits, Not Offered Every Year

Four day field trip. Study of plants, animals, geology, and history of the Northern Basin and Range ecoregion at the Malheur Environmental Field Station in southeast Oregon. Required: Student Petition.

Required: Field trip

**BI-165C** Natural History of the Oregon Coast

3 credits, Not Offered Every Year

Explores the natural processes that form our Northwest coastal environment: geologic development, shoreline processes, oceanography, and environmental hazards. Topics include the ecology of marine mammals, fish, birds, estuaries, tidepools, sand dunes, and coastal forests.

**BI-165CL** Natural History of the Oregon Coast with Lab

4 credits, Not Offered Every Year

Explores the natural processes that form our Northwest coastal environment: geologic development, shoreline processes, oceanography, and environmental hazards. Topics include the ecology of marine mammals and birds, estuaries, tide pools, sand dunes and coastal forests. Lab included with field trips and lab activities.

**BI-165D** Natural History of the Western Deserts

4 credits, Winter

A lecture and lab course studying plants, animals, geology, ecology and environmental issues of western deserts. This intensive nine-day field course travels through western desert regions. Required: Student Petition.

Prerequisites: WRD-098 or placement in WR-121Z

Recommended: One term of college-level science

Corequisites: BI-165DL

**BI-175** Integrated Science Inquiry

4 credits, Fall

An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrated themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included: Evolution: the Idea that Shocked the World, the People and Animals of Africa, and the Lewis and Clark Expedition.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

Corequisites: BI-175L

**BI-176** Integrated Science Inquiry

4 credits, Winter

An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrated themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included: Human Evolution, Diseases of Africa, and the Lewis and Clark Expedition.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

Corequisites: BI-176L

**BI-177** Integrated Science Inquiry

4 credits, Fall

An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrated themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included Evolution & Contemporary Issues, Africa, and the Lewis and Clark Expedition.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

Corequisites: BI-177L

**BI-204** Elementary Microbiology

4 credits, Winter

A lab class with environmental focus. This class explores microscopic life and its importance in the environment and in industry. We also learn about the causes and implications of waterborne pathogens. Labs will provide practice with aseptic techniques and introduce tools and current methodologies used in the study of microorganisms.

**BI-211** General Biology for Science Majors (Cellular Biology)

5 credits, Fall

The first term of a three-term laboratory course sequence for science majors and pre-professional students. The course emphasizes cellular biology; including the process of science, cell structure, organization and function, cellular communication, biochemical processes, DNA cell cycle, protein synthesis, biotechnology, genetics, evolution, and an introduction to tissues, organs and organ systems.

Prerequisite or Corequisite: CH-104 or CH-221

Prerequisites: MTH-111Z or placement in MTH-112Z

Recommended Prerequisites: WRD-098 or placement in WR-121Z

Corequisites: BI-211L

**BI-212** General Biology for Science Majors (Animal Biology)

5 credits, Winter

This course is the second quarter of a three-quarter sequence of a laboratory course for science majors and pre-professional students. It emphasizes an evolutionary approach to animal biology; including animal diversity, development and the effects of Hox genes and hormones, comparisons of animal body systems including human, homeostasis and behavior.

Prerequisite or Corequisite: CH-105 or CH-222

Corequisites: BI-212L

**BI-213** General Biology for Science Majors (Plant Biology & Ecology)

5 credits, Spring

This course is the third quarter of a three-quarter sequence of a laboratory course for science majors and pre-professional students. It emphasizes an evolutionary approach to plant biology and ecology; including plant diversity, plant organ systems and their functions, photosynthesis and transpiration, productivity and energy transfer, nutrient cycles, population dynamics, ecosystems and environmental issues.

Prerequisite or Corequisite: CH-105 or CH-222

Corequisites: BI-213L

**BI-231 Human Anatomy & Physiology I**

4 credits, Fall/Winter/Spring/Summer

A lab course designed for students entering the physical education or medically-related fields. Includes body organization, terminology, tissues and systemic study of the integumentary, skeletal and nervous systems. Animal organ dissection required.

Prerequisites: BI-112 (preferred), or BI-101 and BI-102, or BI-211.

CH-112 (preferred), or CH-104 and CH-105, or CH-221 and CH-222

Corequisites: BI-231L

**BI-232 Human Anatomy & Physiology II**

4 credits, Fall/Winter/Spring/Summer

Lab course covering structure and function of the muscular, cardiovascular, lymphatic, and respiratory systems. Animal organ dissection required.

Prerequisites: BI-231 with a C or better

Corequisites: BI-232L

**BI-233 Human Anatomy & Physiology III**

4 credits, Fall/Winter/Spring/Summer

Lab course covering neuroendocrine control, digestive, excretory and reproductive systems. Study of fluid, electrolyte and acid-base balance. Animal organ dissection required.

Prerequisites: BI-232 with a C or better

Corequisites: BI-233L

**BI-234 Introductory Microbiology**

4 credits, Fall/Winter/Spring

An introductory microbiology lab course required for health science and science majors. Includes characteristics, physiology and growth requirements of microorganisms, interactions between humans and microorganisms, immunology, infection, and principles of microbial control. This course emphasizes critical thinking and analytical skills in a collaborative laboratory environment.

Prerequisites: BI-101, BI-112 or BI-211; and CH-104, CH-112 or CH-221

Corequisites: BI-234L

## Business Administration (BA)

**BA-OSU Accounting for Decision Making**

4 credits, Winter

BA-315 through Oregon State University (OSU)

**BA-101 Introduction to Business**

4 credits, Fall/Winter/Spring/Summer

Introduces the American business system in a changing global environment. Disciplines covered include economics, entrepreneurship, formation, accounting, finance, marketing, and management. In addition, students are introduced to current opportunities in seeking an AAS degree and/or current certificate offerings within the CCC Business Department.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**BA-103 Business Strategies for Computer Consultants**

3 credits, Spring

Class introduces the procedures for establishing and developing a successful consulting business in computer-related services including web development, network support, and computer support.

**BA-104 Business Math**

3 credits, Fall/Winter/Spring/Summer

Apply mathematics to a variety of transactions found in the business world, from finance to project management, and from sales to accounting, including: payroll, product or service mark-ups and mark-downs; simple and compound interest; present and future value of a single sum of money and annuities; and financial ratio analysis.

Prerequisites: placement in MTH-020 or higher

**BA-111 General Accounting I**

3 credits, Fall/Winter/Spring/Summer

Introduces the terminology and processes of full-cycle, modified cash and accrual basis bookkeeping for small service and merchandising businesses with inventory. Focus is on how to analyze and record financial transactions, reconcile accounts and trial balances, and prepare basic financial statements. Additional topics include cash management, bank reconciliations, accounting for sales and purchase discounts.

Emphasizes procedure and practice.

Recommended: Placement in MTH-020

**BA-112 General Accounting II**

4 credits, Winter/Spring

Provides a more in-depth look at general accounting principles and practices for small business. Topics include payroll, recording bad debt, notes receivable and payable, inventory adjustment, and long-term asset valuation. Accounting practices for partnerships and manufacturing structures are examined, and financial analysis is introduced as a tool for evaluating the health and wealth of a business.

Prerequisites: BA-111 or BA-211

Recommended Prerequisites: BA-131 or CS-135S

**BA-119 Project Management Practices**

2 credits, Fall/Winter/Spring

Basic course in project management, intended for non-project management students. Students gain a basic understanding of project management principles and techniques, with emphasis on scope planning, scheduling, and resource management. Students learn practical application of cost control, time management, and communication in project environments.

**BA-120 Project Management Fundamentals**

4 credits, Fall/Winter/Spring

Foundational course in project management. Students gain an introduction to project management principles and techniques, including identifying project life cycle phases, generating a project charter, learning and applying stakeholder management techniques, generating work/task breakdowns, network diagrams and identifying the critical path. Students will also learn and apply risk management techniques, resource allocation, and project monitoring and controlling methodologies.

Recommended: Working knowledge and access to MS Excel and MS Word

**BA-123 Leadership & Motivation**

3 credits, Winter/Spring

Focuses on leadership-achieving organizational goals by employing human, financial, and organizational resources-and provides both a theoretical and a practical perspective on leadership and motivation skills. By engaging in both introspective and interactive exercises, students build the expertise necessary to lead both projects and organizations.

**BA-125 Project Management Prep**

5 credits, Fall/Winter

Tools and processes employed in the project knowledge areas of project communication, risk, procurement, and quality. Major topics include project communication planning and preferred communication channels and approaches; risk assessment and risk management in a project environment; project procurement planning and management with an emphasis on contract types and contract awards and administration; and approaches to project quality planning, quality assurance, control and improvement.

Prerequisite or Corequisite: BA-120

**BA-127 Project Management: Agile & Change Management**

4 credits, Winter/Spring

This course introduces students to the basic concepts and principles of Agile and Change Management. Students explore the foundation of the Agile approach for managing projects, the Agile Manifesto and Agile principles & values. Students work in small teams to experience an Agile project team environment. Value-driven delivery and adaptive project planning are defined. Students will gain an understanding in how being agile in business practices can ease the implementation of organizational change. This course will also instruct students in how to identify what drives organizational change and how to lead & communicate through change. Students will learn about creating and sustaining an organizational culture for change and moving forward.

Prerequisites: BA-120 and BA-125

**BA-128 Project Management: Leadership Strategies**

4 credits, Fall/Winter

This course is an introductory course for students to explore different leadership styles. Through introspective exercises/assignments, students will have opportunities to find their leadership voice. Topics include the comparisons among various leadership versus management paradigms, mediation and negotiation techniques, employee engagement, team building, mentor-ship, tactical planning, creative decision-making, managing crisis conversations, and emotional intelligence.

**BA-131 Introduction to Business Computing**

4 credits, Fall/Winter/Spring/Summer

Introductory course using Microsoft Word, Excel, Access, and PowerPoint applications to create business documents.

Required: Access to the following equipment and software: Personal computer or laptop with MS Windows operating system (preferably Windows 8 or 10), Microsoft Office Professional, internet access (including email); or access to the CCC Dye Academic Computer Lab for completion of coursework

Recommended Prerequisites: WRD-090 or placement in WRD-098

**BA-177 Payroll Accounting**

3 credits, Winter/Spring

This course introduces the student to the basic payroll procedures and transactions that are necessary for recording business transactions that compensate personnel. Included in this introduction are wage, salary, and commission or bonus computation and recording, as well as coverage of the federal laws that affect payroll, taxation, and payroll deductions.

Prerequisites: BA-111 or BA-211

Recommended Prerequisites: BA-131 or some knowledge of Excel

**BA-205 Business Communications With Technology**

4 credits, Fall/Winter/Spring

Students practice critical skills for successful communication in a business environment by employing a structured writing process, analyzing audience needs, and identifying and using appropriate communication channels and modalities. Students also work individually to produce a PowerPoint presentation with embedded narration and as team members to manage a comprehensive project and complete a business research paper.

Recommended Prerequisites: BA-131 and WR-121Z

**BA-206 Management Fundamentals**

4 credits, Winter/Spring

Concepts and theories of management with focus on planning, organizing, leading, and controlling. Decision making, planning principles, global management, managing people and teams, effective communication, and motivation are included.

Prerequisites: BA-101, BA-251, and WRD-098, or Student Petition

**BA-208 Employee and Labor Relations**

4 credits, Summer/Winter

Provides a legal and historical overview of employee and labor relations in both union and non-union environments. Presents a realistic picture of collective bargaining and labor relations situations and highlights contemporary issues in employee relations, unions, bargaining units, and employee group representation.

**BA-211 Financial Accounting**

4 credits, Fall/Winter/Spring/Summer

Student develops skills in the essential principles of accrual-basis financial accounting for service and merchandising companies. Topics cover the recording and reporting of financial transactions according to generally accepted accounting principles through the complete accounting cycle. Included are managing inventory, accounting for receivables, reconciling the cash account, internal controls, long-term assets, current liabilities, stockholders' equity, ratio analysis, ethics, using Excel, and financial statement reporting. Emphasis is on procedure and process.

Prerequisites: BA-101 and BA-131

Recommended Prerequisites: BA-111, and MTH-050 or higher

**BA-213 Decision Making With Accounting Information**

4 credits, Fall/Winter/Spring/Summer

Building on the introduction to financial accounting, this course focuses on managerial accounting, which is the language of business for internal management in manufacturing and service organizations. Managerial accounting drives effective operational decisions by analyzing the components and flow of costs for products and services, as well as for jobs, activities, and segments. Budgets convey an organization's plan of operations, while performance measurement compares variances with actual results. This course is recommended for those interested in business in general, as well as for those planning a career in accounting.

Prerequisites: BA-211

**BA-214 Business Communications**

3 credits, Winter

This course focuses on the development of written communication skills in a business organization. Within communications, the interpersonal skills, in the form of both written and oral expression, are integrated to achieve individual and organizational objectives. Both informal and formal techniques are applied to a variety of business communication scenarios.

Recommended Prerequisites: WR-121Z, and CS-120 or BA-131

**BA-216 Cost Accounting**

4 credits, Winter

Cost accounting extends the content of BA-213, which focused on managerial accounting. Specifically, job order and process costing are examined in depth, including: variances and cost estimations; standard and variable costing in the manufacturing environment; inventory and capacity analysis; customer-profitability analysis; spoilage, rework and scrap; and performance measurement.

Prerequisites: BA-213

**BA-217 Budgeting for Managers**

3 credits, Fall/Spring

Budgeting is a crucial managerial decision-making and planning tool that also incorporates performance evaluation through variance analysis.

This course examines developing and managing department and project budgets in-depth, as well as how they fit into the overall organizational framework. Specifically, this course includes coverage of static, flexible, and rolling budgets, capital budgeting, variance analysis, break-even and contribution margin analysis, profit planning, manufacturing costs, sales forecasts, and cost behavior.

Prerequisites: BA-211

Recommended Prerequisites: BA-213 or some experience in budgeting

**BA-218 Personal Finance**

4 credits, Fall/Winter/Spring/Summer

Analysis and application of basic principles of personal finance including budgeting and spending, financial decision-making, use of credit, saving and investing, home purchase, taxes, risk management, retirement planning, estate planning, and other major personal finance topics.

Prerequisites: BA-104 or MTH-050 or higher, and WRD-098

**BA-223 Principles of Marketing**

4 credits, Fall/Winter/Spring

Offers a comprehensive investigation of strategic marketing in a global environment. Topics covered will include research, ethics, consumer behavior, product strategy, distribution strategy, promotional strategy and pricing strategy.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**BA-224 Human Resource Management**

4 credits, Fall/Winter/Spring

Focuses on a practical, real world approach to Human Resource Management for line managers and Human Resource Managers. Introduces history and current legal environment of Human Resource Management and applies current practice in the functions of staffing, human resource development, compensation, safety and health, and employee and labor relations in both union and non-union environment.

**BA-226 Business Law I**

4 credits, Fall/Winter/Spring

Includes concepts, principles, and rules of law applicable to business and personal transactions, with emphasis on sources of law, the U.S. Constitution, personal and business torts and crimes, case-based applications, ethics, and consumer contract law.

**BA-228 Computerized Accounting**

3 credits, Fall/Spring

An introductory, hands-on experience with computer applications that are used for accounting, including transaction entry for a full accounting cycle, from business setup through month-end close. This course features instruction for Quickbooks Online.

Prerequisites: BA-111 or BA-211

**BA-229 Employment Law**

4 credits, Spring

Comprehensive treatment of federal and state employment law and its impact on the Human Resource Manager and Human Resource Management practices.

**BA-238 Sales**

4 credits, Spring

Professional consultative selling techniques and how professional selling fits into a comprehensive marketing program as well as daily life. Interactive exercises will be used throughout the course that emphasize face-to-face communication skills and relationship building.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**BA-239 Advertising**

4 credits, Winter

Emphasizes a strategic and integrated approach to promotion where traditional and non-traditional techniques of promotion are explored. The relationship and role of advertising to marketing will be stressed throughout the course.

Recommended Prerequisites: BA-101, and WRD-090 or placement in WRD-098

**BA-240 Introduction to Financial Management**

4 credits, Spring

In this course, you will build upon knowledge obtained from the Principles of Accounting courses to comprehend the process and practice of corporate financial management. Purchasing capital assets and undertaking projects require sound decision-making and management of risk, as well as a solid understanding of the time value of money.

In this course, you will delve into discounted cash flow analysis for stocks and bonds, capital budgeting, the cost of capital, and effective corporate financial planning. Both theoretical and practical, our focus is on decisions that are made by the corporate financial manager.

Prerequisites: BA-211

**BA-249 Retailing**

3 credits, Not Offered Every Term

Provides an understanding of the types of retail businesses, strategies, operations, formats and environments through which retailing is carried out, including a multi-disciplinary approach to understand the structure of effective retail management.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**BA-250 Small Business Management**

4 credits, Spring

Focuses on entrepreneurship and small business management from business concept development to new business launch and key steps in between. Students integrate knowledge and skills from prior business coursework to create a substantive business plan or other projects that reinforce essential entrepreneurship and small business management concepts that are associated with this course. Students should take this course in the final year of their academic program(s).

Prerequisites: BA-101, BA-119, BA-131, BA-206, BA-213, BA-223, BA-224, and WR-121Z. Student Petition required for non-Business AAS students

**BA-251 Supervisory Management**

3 credits, Fall/Winter

Addresses the role and responsibilities of the first-line supervisor or manager. Includes planning and controlling, dealing with change, performance management, leadership, decision-making, communication, and managing teams.

Recommended Prerequisites: WRD-090 or placement in WRD-098



**BA-254 Basic Compensation & Benefits**

4 credits, Spring

Covers wages, salary benefits, and plans with a primary focus on designing an effective and strategic comprehension and benefit program within an organization. Covers general compensation topics, terminology, and practical applications to the workplace.

**BA-255 Governmental and Nonprofit Accounting**

4 credits, Spring

Build upon knowledge obtained from financial accounting coursework to comprehend and gain practice in the specialized area of accounting for governmental and nonprofit entities. Topics include fund types, budgetary and expenditure controls, and modified accrual accounting.

Prerequisites: BA-211

Recommended Prerequisites: BA-112, BA-213

**BA-256 Income Tax Accounting**

4 credits, Winter

Detailed review of the federal tax structure, as it relates to the preparation of individual tax returns, including those with business and investment activities. This course briefly overviews corporate tax returns.

Prerequisites: BA-211 or financial accounting experience

**BA-261 Consumer Behavior**

4 credits, Spring

Seeks to understand how and why people make consumption decisions then apply this understanding to marketing strategies. Concepts of the consumer decision-making process, personal and interpersonal factors and their impact on consumer decisions are major components.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**BA-264 Project Management Tools**

3 credits, Spring

This course introduces students to three tools used in managing projects: Microsoft Teams, Microsoft Planner, and Microsoft Project. Students examine the criteria for selecting the right project management tool for task management, work management, and project management. Students learn how to use these tools for communicating and collaborating with project team members and stakeholders; planning a project, adding project tasks, assigning resources and costs; building a project schedule, moving tasks to different phases, tracking project progress, and properly closing out a project. Students will also gain an understanding of how to share project information across applications using dashboards and reports. In addition, students will briefly explore cloud-based options as alternative project management tools.

Prerequisites: BA-120

**BA-268 Applied Project Demonstration**

3 credits, Winter/Spring

Students demonstrate the ability to manage a real-world project from initiation through closing. Course deliverables include project scope statement, communication management plan, risk management plan, status report with Gantt chart, and 'Lessons Learned' report and presentation. The project as well as a comprehensive exam will demonstrate knowledge acquired in prerequisite classes required for the Project Management AAS. Required: Student Petition.

Prerequisites: BA-120, BA-125, and BA-127

**BA-270 Social Media Marketing**

4 credits, Fall/Winter/Spring/Summer

This is an introductory course that provides an overview of social media and its role in marketing. Nearly everything consumers do is tracked online and this level of marketing analytics is assisting organizations develop a better understanding of consumer and market needs and trends. This course will seek to develop an understanding to how social media compliments marketing.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**BA-280 Business/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. On-the-job experience in a business related to the student's major course of study. Under supervision of instructor and employer. Variable Credit: 2-6 credits. May be repeated for up to 6 credits. Required: Student Petition.

Corequisites: CWE-281

**BA-285 Human Relations in Business**

4 credits, Fall/Winter/Spring

Introduces the theory and practical application of human relations at the individual, group, and organizational levels. Emphasizes psychological principles that help build relationships among employees and employers. Includes goal setting, motivation, communication, leadership, conflict management, and individual and group behavior.

## Business Technology (BT)

**BT-120 Personal Keyboarding**

2 credits, Fall/Winter/Spring/Summer

Basic instruction on electronic alphanumeric keyboard. Provides practice for speed and accuracy within an individual program. Students will also develop the necessary skills to effectively use the Internet, use email, and create simple documents within a Google email profile and/or Microsoft Word.

**BT-121 Data Entry**

1 credits, Fall/Winter/Spring/Summer

This course is designed to teach the computer numeric keypad by touch with speed and accuracy using industry standards for data entry. This skill is especially helpful to people in the fields of data entry, accounting, office administration, insurance, banking and finance, and any other work that requires numeric input.

**BT-122 Keyboarding Skillbuilding**

2 credits, Fall/Winter/Spring/Summer

Designed to improve keyboarding proficiency using the standard keyboarding by touch method established within BT-120. Speed and accuracy on the keyboard will be further refined. Proper formatting of various types of business communication will be reviewed and established (emails, memos, block-style business letters). Students will utilize Microsoft Word and/or Google documents to create letters and memos.

Prerequisites: BT-120

**BT-124 Business Editing I**

3 credits, Summer/Fall/Winter

Course builds business communication skills through the study of the written communication process and the correct use of grammar, spelling, vocabulary, types of written business communication, and basic editing principles.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**BT-125 Business Editing II**

3 credits, Winter/Spring

This course continues the study of professional editing and writing in a business office. The continued and correct use of acceptable spelling, grammar, and formatting of business documents will be covered in-depth, with increased practice in writing and editing skills in the composition of letters, memos, emails, reports, and presentations. Functional business reports will be covered in relation to written reports and proposals, as well as customer service phone etiquette and the creation of professional presentations for the workplace.

Prerequisites: BT-124 with a C or better

**BT-160 Word I**

3 credits, Fall/Winter

Introductory-level course where students learn basic concepts of the Word software program. This course is designed for students who have no or little knowledge of Word.

Required: Access to the following equipment and software: Personal computer or laptop with MS Windows operating system (preferably Windows 8 or 10), MS Word, or access to the CCC Dye Academic Computer Lab for coursework

Recommended: 35 words per minute typing skill or BT-120

**BT-161 Word II**

3 credits, Spring

This is an intermediate-level course where students learn more advanced features of the Microsoft Word software program. The course is designed for students who have completed BT-160, Word I.

Required: Access to the following equipment and software: Personal computer or laptop with MS Windows operating system (preferably Windows 8 or 10), MS Word, or access to the CCC Dye Academic Computer Lab for coursework

Prerequisites: BT-160 with a C or better

Recommended Prerequisites: BT-124 and 35 words per minute typing skill

**BT-174 Microsoft Digital Tools for the Professional**

2 credits, Spring

Introductory course utilizing Microsoft Office 365 digital communication and collaboration tools. The material taught in this course teaches the necessary skills required in business environments that use Outlook integrated with additional Office 365 complementary digital communication and collaboration tools.

**BT-216 Office Procedures**

4 credits, Winter

Applies critical thinking, problem solving, and collaborative learning skills and knowledge to business office operations. Operational areas include communications, technology, records management, safety, travel, meeting management, mail procedures, reprographics, and career planning.

Prerequisites: BA-131

**BT-262 Integrated Projects**

4 credits, Fall

Advanced use and integration of Microsoft Word, Excel, Access and PowerPoint skills in creating letters, reports, and forms; creation of advanced Excel worksheet reports and budgets; creation of Access databases to generate reports and forms; creation of PowerPoint presentations. Introduction to the use of Adobe Professional for use with documents, forms, and web pages. Google applications such as documents, presentations, spreadsheets, and Gmail.

Prerequisites: BA-131 and BT-160

**BT-271 Advanced Business Projects**

4 credits, Spring

This is a capstone course for the Administrative Professional AAS. Students will utilize processes, tools, and techniques as used by an administrative professional managing a project or event. Students will practice oral and written communication as used in an office or business setting. In addition students will analyze information, problem solve, make decisions, establish priorities, and use time management skills in this capstone course that combines the knowledge and skills acquired in foundation administrative professional courses such as word processing, creating spreadsheets, creating databases, creating presentations; as well as document formatting, proofreading, and editing.

Prerequisites: BA-131, BT-120, BT-125, BT-160, BT-262, and CS-135S

## Chemistry (CH)

**CH-104 Introductory Chemistry**

5 credits, Fall/Winter/Spring/Summer

A lab transfer course for students in nursing, allied health fields and liberal arts. Topics include: observation, measurement, composition, stoichiometry, atomic structure, periodic table, bonding and nomenclature.

Prerequisites: MTH-065 or MTH-098 or placement in MTH-095; and WRD-090 or placement in WRD-098

Corequisites: CH-104L and CH-104S

**CH-105 Introductory Chemistry**

5 credits, Summer/Winter/Spring

A lab course discussing heat; molecular and ionic interactions in solids, liquids, gases, and solutions; chemical reactions including acid-base, electron transfer, and equilibrium.

Prerequisites: CH-104

Corequisites: CH-105L and CH-105S

**CH-106 Introductory Chemistry**

5 credits, Spring/Summer

A lab course discussing organic and biochemistry.

Prerequisites: CH-105

Corequisites: CH-106L and CH-106S

**CH-112 Chemistry for Health Sciences**

4 credits, Fall/Winter/Spring/Summer

One-term preparatory chemistry course for students who want to take BI-231 and/or BI-234. Includes measurement; atomic structure; periodic table; bonding; nomenclature; heat; molecular and ionic interactions in solids; liquids and solutions; chemical reactions including acid-base; organic chemistry; and biochemistry.

Prerequisites: MTH-065 or MTH-098 with a C or better or placement in MTH-095

Prerequisites: WRD-090 or placement in WRD-098

Recommended Corequisite: BI-112

Corequisites: CH-112L

**CH-114 Chemistry in Art**

4 credits, Not Offered Every Term

An introductory laboratory science course designed specifically for the non-science student. Offers a broad, non-quantitative descriptive survey of scientific principles relevant to art and art-related topics such as light, color, pigments, dyes, solubility, acidity, oxidation, and polymers. Emphasizes an interdisciplinary perspective on chemistry.

Recommended Prerequisites: WRD-090 or placement in WRD-098

Corequisites: CH-114L



**CH-150** Preparatory Chemistry

4 credits, Fall/Spring

One term preparatory course for students who must take the general chemistry sequence (CH-221/222/223) but have no chemistry background.

Prerequisites: MTH-095 or placement in MTH-111Z

Corequisites: CH-150S

**CH-221** General Chemistry

5 credits, Fall/Winter

Transfer lab course for science, engineering, and professional majors. Covers the nature of chemistry, atomic theory, electron configuration, structure, bonding, properties, composition and nomenclature of covalent and ionic substances. Introduces organic chemistry and biochemistry topics.

Prerequisites: CH-104 and CH-105, or CH-150, with a C or better; or a year of high school chemistry within five academic years of beginning CH-221 (passed all terms with C or higher)

Corequisites: CH-221L and CH-221S

**CH-222** General Chemistry

5 credits, Winter/Spring

A lab course discussing basic concepts of chemical bonding; molecular geometry and bonding theories; gases; intermolecular forces, solids, and liquids; properties of solutions; kinetics; and chemical equilibrium.

Prerequisites: CH-221 with a C or better

Corequisites: CH-222L and CH-222S

**CH-223** General Chemistry

5 credits, Spring/Summer

A lab course discussing states of matter, solutions, acids and bases, electrochemistry, nuclear chemistry, and spectroscopy. Topics involving organic chemistry and biochemistry are introduced.

Prerequisites: CH-222 with a C or better

Corequisites: CH-223L and CH-223S

**CH-241** Organic Chemistry I

5 credits, Fall

First term of transfer sequence meeting organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering and biology majors.

Prerequisites: CH-223

Corequisites: CH-241L and CH-241S

**CH-242** Organic Chemistry II

5 credits, Winter

Second term of transfer sequence meeting organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering and biology majors.

Prerequisites: CH-241

Corequisites: CH-242L and CH-242S

**CH-243** Organic Chemistry III

5 credits, Spring

Third term of a transfer sequence meeting organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering and biology majors.

Prerequisites: CH-242

Corequisites: CH-243L and CH-243S

## Communication Studies (COMM)

**COMM-100Z** Introduction to Communication

4 credits, Fall/Winter/Spring/Summer

COMM-100Z is a survey course offering an overview of the communication discipline that emphasizes the development of best communication practices in different contexts.

**COMM-111Z** Public Speaking

4 credits, Fall/Winter/Spring/Summer

COMM-111Z emphasizes developing communication skills by examining and demonstrating how self-awareness, audience, content, and occasion influence the creation and delivery of speeches and presentations.

Prerequisites: WRD-098 or placement in WR-121Z

**COMM-112** Persuasive Speaking

4 credits, Not Offered Every Year

Study and practice of persuasive speaking, audience analysis, reasoning, and the basic theories of persuasion.

Prerequisites: COMM-111Z or Student Petition

**COMM-126** Introduction to Gender Communication

4 credits, Fall/Winter/Spring

This course explores the relationships among communication, gender, sexuality, and other intersections of identity. We will examine how contact produces and perpetuates constructions and performances of gender, as well as how understandings of gender influence communication practices. We will learn about various approaches to the study of gender and communication, and we will identify predominant patterns of gendering that shape our culture.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**COMM-140** Introduction to Intercultural Communication

4 credits, Not Offered Every Term

Intercultural Communication is a course dedicated to exploring the impact cultural differences have on the communication process. Students explore their own cultural behaviors and possible ways to deal with difficult situations when cultural differences cause a problem(s). Emphasis is given to the influence of culture on the interpretation of the communication act and to the communication skills that enhance cross-cultural communication.

Required: Non-native English speakers must have a Student Performance Level of 8 as measured by the BEST Plus.

There is not a requirement for native speakers

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**COMM-212** Mass Media & Society

4 credits, Fall/Winter/Spring

This course takes students through a critical study of the production and consumption of mass media, including television, radio, books, film, news, advertising and the internet. Students also examine the economic and social organization of mass media, the growth of new media technologies, and the relationship between media and the public.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**COMM-218Z** Interpersonal Communication

4 credits, Fall/Winter/Spring/Summer

COMM-218Z increases the knowledge and use of competent communication skills to better understand oneself, others, and the role of communication in interpersonal relationships.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**COMM-219** Small Group Discussion

4 credits, Not Offered Every Year

Theories and practices of small group communication through group discussions, readings and written exercises. Emphasis on effective group communication, leadership skills, and problem-solving in small groups. Recommended Prerequisites: WRD-098 or placement in WR-121Z

**COMM-227** Nonverbal Communication

4 credits, Winter

Explores theories and types of nonverbal behavior in relation to the creative process of human communication. Examines the influence, interpretation, and/or management of such qualities as appearance, body movement, facial expression, voice, use of space, touch, and time. Considers how physical environments, social roles, gender, and inter/intra-cultural beliefs and values have an effect on relationships among individuals and groups. Applies theoretical interpretations to nonverbal communication found in various forms of human expression.

Recommended Prerequisites: Placement in WR-121Z

**COMM-280** Speech/CWE

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job experience in the field of communications. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

## Computer Science (CS)

**CS-120** Survey of Computing

4 credits, Fall/Winter/Spring/Summer

A computer competency course to familiarize students with computer concepts, software applications and the implications of living in the digital age. Introduces students to computer concepts, including, but not limited to the Microsoft Windows environment, Microsoft Office Applications, hardware terminology, social media and the Internet.

Required: Flash drive

Prerequisites: WRD-098 or placement in WR-121Z

**CS-125H** HTML & Web Site Design

4 credits, Fall/Winter/Spring/Summer

Hands-on approach to planning, design, and developing published web sites using HTML tags in a text editor. The class focuses on basic HTML coding using HTML 5 models. Hyperlinks, images, cascading style sheets, forms, accessibility and design principles will be covered, as well as tools such as FTP clients, accessibility checkers, and validators.

Prerequisites: CS-120 or placement into CS-125H

**CS-133J** Front-end JavaScript I

4 credits, Winter

Design, programming, testing of scripted web pages using JavaScript for client-side applications and to call PHP-based server-side applications. Introduction to fundamental concepts of interactive web pages and server-side connectivity. Covers the Document Object Model (DOM) and programming constructs like variables, operators, functions, control structures, and exception handling. Emphasis on creating and consuming object literals and JSON objects.

Prerequisites: CS-125H

**CS-133VB** Visual Basic.NET I

3 credits, Fall/Spring

Hands-on approach to software design using object-oriented programming. Planning an application, building a user interface, using variables and constants, calculating, accumulating, counting, making decisions, using functions, and using menus.

Prerequisites: BA-131 or CS-120, and MTH-060 or placement in MTH-065

**CS-135DB** Microsoft Access

3 credits, Fall/Spring

Focuses on the advanced database capabilities using a current version of Microsoft Access. Topics include design, construction, and documentation of a database management system, designing reports, forms, advanced form techniques, advanced queries, customizing tables, and creating and using an application system with macros.

Prerequisites: CS-120 or placement into CS-135DB

**CS-135I** Advanced Web Design With Dreamweaver

4 credits, Winter

Plan and publish a professional, standards-based, accessible web site via a variety of tools. Complete market and user-needs analysis to best target site content and design. Create a graphical web site mock-up, then use CSS (including a framework and pre-processors), scripts, and multimedia to realize site goals. Emphasizes professional design techniques.

Prerequisites: CS-125H

**CS-135S** Microsoft Excel

3 credits, Fall/Winter/Spring

Focuses on advanced spreadsheet capabilities using a current version of Microsoft Excel. Topics include design, construction, and documentation of spreadsheets, use of templates, multiple worksheets, complex formulas, functions and filtering, Pivot Tables, advanced chart features, sorting, database capabilities, finding data, creating subtotals, using lookup tables, finding trends and forecasting, creating and editing macros, validating data, and working with controls.

Prerequisites: CS-120 or placement into CS-135S

**CS-135W** Microsoft Word

3 credits, Winter

This course focuses on advanced word processing features using the latest version of Microsoft Word. Topics include using tables, merging form letters and data source files, desktop publishing, large document capabilities including master documents and indexes, and linking and embedding objects between Office applications.

Prerequisites: CS-120 or placement into CS-135W

**CS-140** Introduction to Operating Systems

4 credits, Fall/Spring

Introduction to the theory and practical foundations of the Windows, Linux/UNIX, and macOS desktop operating systems. Discussion of and practice with OS administration through installation, configuration, networking, security, and virtualization.

Prerequisites: CS-120 or equivalent placement, and MTH-060 or placement in MTH-065, and WRD-098 or placement in WR-121Z

**CS-140L** Linux for Programmers

4 credits, Spring

Introduction to the Linux command line and software development tools. Covers how to use the command line and build tools, including VIM, GCC/G++, make, gdb, and others. Students will gain experience with the build tools by writing and debugging relatively complex programs in both C and C++.

Prerequisites: CS-162

**CS-151** Networking I

4 credits, Winter

This course introduces students to networking architectures, models, protocols, and components. These components facilitate the connection of users, devices, applications, and data through the internet and across modern computer networks. This course, along with CS-152 and CS-153, covers the topics of the Cisco CCNA certification exam.

Prerequisites: CS-140 or CS-160, or Student Petition

**CS-152 Networking 2**

4 credits, Spring

This course focuses on switching technologies and router operations that support small-to-medium business networks. It includes wireless local area networks (WLANs) and security concepts. This course, along with CS-151 and CS-153, covers the topics of the Cisco CCNA certification exam.

Prerequisites: CS-151

**CS-153 Networking 3**

4 credits, Not Offered Every Year

This course describes the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks. This course covers wide area network (WAN) technologies and quality of service (QoS) mechanisms used for secure remote access. It also introduces software-defined networking, virtualization, and automation concepts that support the digitalization of networks. This course, along with CS-151 and CS-152, covers the topics of the Cisco CCNA certification exam.

Prerequisites: CS-152

**CS-160 Computer Science Orientation**

4 credits, Fall/Winter/Spring

Examines foundational computing subjects used in Computer Science and Information Technology. Topics include computer architecture, electronic logic, data representation, networking, algorithms and programming, which are used in successive Computer Science courses. Information about degrees in Computer Science and Information Technology is also covered.

Recommended Prerequisites: MTH-060 or placement in MTH-065

**CS-161 Computer Science I**

4 credits, Fall/Winter

Introduction to fundamental concepts of structured programming, including problem solving, algorithm and program design, data types, loops, control structures, subroutines, and arrays. Learn to write structured programs in a high level programming language.

Prerequisites: MTH-111Z or placement in MTH-112Z, or 4 years high school math

**CS-162 Computer Science II**

4 credits, Winter/Spring

Introduces fundamental concepts of object oriented programming and dynamic memory management. Covers objects, classes, pointers, dynamic memory allocation, linked lists, and program correctness, verification, and testing.

Prerequisites: CS-161

**CS-181 CMS Web Development**

4 credits, Winter

Explores creating dynamic and interactive websites via the use of a current content management systems (CMS). Includes installation of CMS/database, working with templates, creating efficient site navigation, enhancing sites using components, modules, plugins, and extensions, including shopping cart utilities and the creation of custom themes.

Prerequisites: CS-125H

**CS-205 System Programming and Architecture**

4 credits, Fall

Introduces how high-level software runs on a computer system. Covers C programming and the assembly that C code becomes. Presents the fundamentals of computer architecture and how instructions and data are represented at the machine level. Provides experience analyzing compiled code to build necessary skills for future work in cybersecurity, operating systems, compilers, and other CS topics involving low-level computation.

Prerequisites: CS-162

**CS-225 Computer End User Support**

3 credits, Fall/Spring

Addresses professional and interpersonal skills needed by technicians who support and manage hardware and software information systems. Customer service skills; troubleshooting; helpdesk operation; product needs analysis, evaluation, purchase, and installation; technical documentation and training.

Prerequisites: CS-120 or placement in CS-121 or equivalent experience. WRD-098 or placement in WR-101 or WR-121Z

**CS-227 Computer Hardware & Repair**

4 credits, Fall

An in-depth course in computer hardware. Covers operational concepts, identification, installation, configuration, and troubleshooting of power supplies, motherboards, microprocessors, memory modules, disk drives, optical drives, and expansion cards. This course, in conjunction with CS-228, covers the topics of the CompTIA A+ certification exam.

**CS-228 Computer OS Maintenance & Repair**

4 credits, Winter

An in-depth course in operating system maintenance and troubleshooting. Covers configuration, maintenance, and troubleshooting of desktop and mobile operating systems, the fundamentals of cloud computing, and client network configuration and troubleshooting. This course, in conjunction with CS-227, covers the topics on the CompTIA A+ certification exam.

Prerequisites: CS-227

**CS-233J Front-end JavaScript II**

4 credits, Spring

In-depth exploration of creating dynamic front-end website designs using modern JavaScript libraries and frameworks, including jQuery. Topics covered include shortcut DOM techniques, updated looping techniques, creating animation effects, and building AJAX applications using data from provided code as well as web APIs (Google, YouTube, Imgur).

Prerequisites: CS-133J

**CS-233W Full-Stack Web Development I**

4 credits, Fall

Begin exploring the power of server-side JavaScript using Node.JS, NPM, and Express. Students will: use server-side JavaScript to implement common packages and bundle their own applications for consumer use; build custom web server applications to respond directly to HTTP requests; create, query, and manage NoSQL databases; and create views to combine user requests, database data, and static content into responsive, data-driven web applications.

Prerequisites: CS-133J

**CS-234P** PHP/MySQL Web Development

4 credits, Spring

Use PHP and MySQL to develop dynamic web sites for use on the Internet. Develop web sites ranging from simple online information forms to complex online applications. Introduce programming fundamentals including variables, control structures, functions and objects. Applications developed use MySQL as the backend database and will explore database connectivity, querying, and security.

Prerequisites: CS-125H

Recommended Prerequisites: CS-275

**CS-234W** Full-Stack Web Development II

4 credits, Winter

Students will complete the stack by exploring a user-interface framework to create interactive, reusable, data-connected web components using React, JSX, and a variety of React Frameworks. Students will complete a MERN (MongoDb, Express, React, Node) portfolio application.

Prerequisites: CS-233W

**CS-240L** Linux Administration I

4 credits, Fall/Spring

Covers the fundamentals of the Linux operating system. Topics include: system architecture, installation, command line and file system. This course, along with CS-241L, covers the topics of the Linux LPIC-1 (or CompTIA Linux+) certification exam.

Prerequisites: CS-140

**CS-240M** macOS Administration

3 credits, Winter

Covers the fundamentals of installing, configuring, troubleshooting, and supporting the macOS operating system. Topics include: installation and setup, user accounts, file systems, data management, applications, network configuration, network services, peripherals, startup and troubleshooting. This course covers the topics of the Apple macOS Support Essentials certification exam.

Prerequisites: CS-140

**CS-240W** Windows Desktop Administration

3 credits, Winter

Covers the fundamentals of installing, configuring, troubleshooting, and supporting the Windows operating system. Topics include: installation, managing disks and file systems, file access security, users, profiles and policies, groups, security, backup, remote access, printing, and troubleshooting. This course covers the topics of the Microsoft Configuring Windows Devices certification exam.

Prerequisites: CS-140

**CS-250** Discrete Structures I

4 credits, Winter

Students will be introduced to discrete structures and techniques for computing. The course, which is the first in the two-term sequence, aims to convey the skills in discrete mathematics that are used in the study and practice of computer science. Topics include: Sets; Graphs and trees; Functions: properties, recursive definitions, solving recurrences; Relations: properties, equivalence, partial order; Proof techniques: inductive proof; Counting techniques and discrete probability.

Prerequisites: MTH-251

**CS-251** Discrete Structures II

4 credits, Spring

Continuation of the introduction to discrete structures and techniques for computing started in CS-250. The course, which is the second in the two-term sequence, aims to convey the skills in discrete mathematics that are used in the study and practice of computer science. Topics include: Logic: propositional calculus, first-order predicate calculus; Formal reasoning: natural deduction, resolution; Applications to program correctness and automatic reasoning; Introduction to algebraic structures in computing.

Prerequisites: CS-250

**CS-260** Data Structures

4 credits, Fall/Spring

Covers common data structures used for the storage and manipulation of data, as well as data abstraction, sorting algorithms, and algorithm analysis. Data structures include linked lists, stacks, queues, binary trees, btrees, hash tables, and graphs.

Prerequisites: CS-162

**CS-275** Database Design

3 credits, Winter

Focuses on design of a relational database management systems (RDMS). Topics will include database development using the a) requirement, b) design, c) implementation model, database theory from flat table design to relational systems, entity-relationship models, one-to-one, one-to-many, and many-to-many relationships, referential integrity, normalization of tables, database programming and querying with SQL, and database security. Although other platforms may be demonstrated, the majority of work will be done with MySQL Server.

Prerequisites: CS-120 or placement into CS-275

**CS-279W** Windows Server Administration

4 credits, Spring

Covers the fundamentals of installing, configuring, troubleshooting, and supporting the Microsoft Windows Server operating system and network infrastructure. Topics include: installation, Active Directory, data storage, resource access, security, monitoring, and disaster recovery. This course introduces the topics of the Microsoft Installation, Storage, and Compute with Windows Server certification exam.

Prerequisites: CS-151 and CS-240W

**CS-280** Computer Science/CWE

1-6 credits, Fall/Winter/Spring/Summer

Cooperative Work Experience. This course provides supervised work experience to supplement the academic classroom environment. Work examples include user support, work with computer applications or programming languages, installation or management PC computer systems, and developing websites. Variable Credit: 1-6 credits. May be repeated for up to 9 credits. Required: Student Petition.

Corequisites: CWE-281

**CS-284** Network Security

3 credits, Winter

This course provides an introduction to the core security skills needed for monitoring, detecting, investigating, analyzing and responding to security events, thus protecting systems and organizations from cybersecurity risks, threats and vulnerabilities. This course covers the topics of the Cisco Cybersecurity Fundamentals and Cybersecurity Operations certification exams.

Prerequisites: CS-151

Recommended Prerequisites: CS-240L and CS-240W



**CS-288W** Windows Network Administration

4 credits, Winter

Continued coverage of network services and administration using Microsoft Windows Server. Topics include: IPv4 and IPv6 addressing, DNS, DHCP, IPAM, network protection, and remote access. This course covers the topics of the Microsoft Networking with Windows Server certification exam.

Prerequisites: CS-279W

**CS-289** Web Server Administration

4 credits, Spring

An introduction to Apache httpd and Microsoft Internet Information Server. Topics include: installation, administration, security, and troubleshooting, as well as the http, https, and ftp protocols.

Prerequisites: CS-240L and CS-240W

**CS-297N** Networking Capstone

4 credits, Spring

The capstone course for the Computer & Network Administration AAS. Provides the opportunity to combine the discrete information learned from program classes together towards the completion of an enterprise-level computer project. Focus can also be placed on researching, practicing, and obtaining an industry-standard certification credential. Emphasis will be placed on project planning, timeline management, creation of training documentation, and oral presentation of completed works.

Prerequisites: CS-152 and CS-288W

**CS-297W** Website Capstone

3 credits, Spring

Provides the opportunity to function in a production design environment, work cooperatively with students from other focus areas, and research emerging website technologies. Emphasis will be placed on client interaction, project teams, and accountability, as well as the development of a professional portfolio web site or completion of a research project in an emerging web-related technology.

Prerequisites: CS-133J and CS-135I

## Computer-Aided Drafting Technology (CDT)

For additional information, contact the Industrial Technology Department at 503-594-3318.

**CDT-102** Sketching & Problem Solving

3 credits, Fall

Freehand sketching encountered in drafting engineering projects. Selecting views and implementing drafting standards. Dimensioning, lettering, sections and auxiliary views are covered. Problem solving in individual and group settings.

**CDT-103** Computer-Aided Drafting I

3 credits, Winter

Introduction to drafting applications using AutoCAD. Instruction includes problem solving, drawing layout, orthographic multi-view projection, line types, geometric construction and current drafting techniques. Use industry standards for CAD drawing, editing, file management, dimensions and notes.

Recommended Prerequisites: CDT-102

**CDT-108A** Introduction to SolidWorks

3 credits, Winter

This course is an introduction to the SolidWorks parametric mechanical software. Students will design 3D solid parts, sheet metal parts and assemblies, and develop 2D documentation from them.

**CDT-130** Introduction to Fusion

2 credits, Winter

This course is an introduction to parametric modeling in Autodesk Fusion. Students will design 3-D solid parts and assemblies and then develop 2-D drawing and CNC machining processes from these models.

**CDT-223** Inventor Fundamentals

3 credits, Fall

Introduces parametric and adaptive modeling techniques using Autodesk Inventor. This course will guide students through design environment setup, creation of simple and complex part geometry, assembly building, animation, and detailed 2D drawing output.

Recommended: Basic working knowledge of Windows operating system and Microsoft Excel

**CDT-224** Professional Web Design

1-3 credits, Spring

Introduction to the design, creation and management of professional web pages. Basic and intermediate HTML document creation, introduction to JAVASCRIPT, use and manipulation of graphic image files, animating web page graphics, HTML forms. Variable Credit: 1-3 credits.

**CDT-225** Advanced SolidWorks

3 credits, Spring

Advanced features of SolidWorks will be discussed and problems will be worked that exemplify them. Subjects include equations, configurations, design tables and dynamics. Required: Student Petition.

Prerequisites: CDT-108A

**CDT-240** Revit for Architecture

3 credits, Not Offered Every Term

Introduction to the basic principles in Revit for architecture and construction. Students create floorplans using walls, doors, and windows; add furniture fixtures, curtain walls, floors, ceiling grids, and generate elevations, sections, details, and schedules directly from the model.

## Cooperative Work Experience (CWE)

**CWE-181** Work Exploration

1-3 credits, Fall/Winter/Spring/Summer

Work exploration provides students an opportunity to explore career options to make informed decisions about possible career fields and programs of study. This class is focused on exploration activities such as job shadow, not demonstration of skills gained through a program. Work exploration is a general course unrelated to specific program areas and does not have a co-requisite seminar. Variable Credit: 1-3 credits. May be repeated for up to 3 credits.

**CWE-281** Cooperative Work Experience Seminar

0 credits, Fall/Winter/Spring/Summer

The seminar provides an opportunity to develop the career management skills necessary to obtain, sustain, and advance in employment. Prepares students for career success. Variable Hours: 11-16 hours.

Corequisites: Program specific CWE course

# Criminal Justice (CJA)

## **CJA-101** Criminology

4 credits, Fall/Winter/Spring

Examines the social problem of crime, including the process of making and breaking laws as well as society's reaction to the phenomenon. Provides a multidisciplinary study of the causes of crime, including its distribution across social strata and demographics. Focuses on theories of criminal behavior and specific types of crime.

## **CJA-110** Introduction to Law Enforcement

3 credits, Fall

Explores theories, philosophies, and concepts of American law enforcement. This course also examines the history of law enforcement, specific components of the system, public safety responses, and the professionals charged with peace keeping.

## **CJA-112** Patrol Procedures

3 credits, Not Offered Every Year

Describes the nature and purpose of patrol activities for the law enforcement officer. Includes routine patrol, emergency procedures and different types of patrols. Examines crime prevention theory and community policing.

## **CJA-120** Introduction to Courts

3 credits, Winter

Studies the judicial process from arrest through appeals, including search and seizure; interrogation; roles of defense attorneys, prosecutors, juries, grand juries, and judges; plea bargaining and guilty pleas; rights of criminal defendants at trial; appeals and habeas corpus.

## **CJA-122** Criminal Law

4 credits, Fall

This course examines the elements, purpose and functions of criminal, traffic, juvenile and liquor laws. Studies historical development, philosophy of law, and constitutional provisions. Examines definition and classification of crime, application of administration of justice, legal research, study of case law, methodology and concepts of law as a social force.

## **CJA-130** Introduction to Corrections

3 credits, Spring

Examines the history, organization, and development of corrections in the United States, including sentencing, incarceration, community corrections and the juvenile justice system. Reviews the use of the death penalty. Identifies trends in corrections.

## **CJA-134** Correctional Institutions

3 credits, Winter

Analyzes prisons, jails and other correctional institutions. Discusses punishment history and rationale. Identifies the functions of the custodial staff and describes institutional procedures: reception, classification, program assignment and release. Studies prison management systems and examines juvenile facilities.

## **CJA-137** Mass Murder and Serial Killers

3 credits, Not Offered Every Term

Explores the phenomenon of both mass murders and serial killings, and the impact each has both upon society and individual victims. Examines recent and historically notorious cases, while probing issues such as causation, social environmental linkage, and the mindset of offenders. May be repeated for up to 3 credits.

## **CJA-170** Careers in Criminal Justice

3 credits, Winter

Prepares students for pursuing a career in the Criminal Justice field. Explores careers in the criminal justice system, including law enforcement, the practice of law, courts, corrections, and private security. Addresses hiring processes, promotions, and workplace ethics. Students will begin creating an e-portfolio. As part of the e-portfolio process, students will analyze first year CJA courses and second year fall term CJA courses for assessment purposes. Provides information on choosing Cooperative Work Experience or Service learning placement in preparation for Criminal Justice Capstone course. Prerequisites: CJA-110 with a C or better

## **CJA-200** Community Policing

3 credits, Spring

Examines interrelationships and role expectations of agencies and public policy. Explores racial and community tension, bias-based policing, community policing, police misconduct, evidence-based policing and best practices in law enforcement. Prerequisites: CJA-110 with a C or better

## **CJA-201** Juvenile Delinquency

4 credits, Winter

Surveys the nature, extent, and causes of delinquent behavior focusing on theories of criminal behavior as they apply to juveniles. Studies historical and contemporary perspectives on juvenile offenders. Provides a multidisciplinary study of the causes of juvenile delinquency. Describes laws, enforcement, court, and correctional procedures within the juvenile system, and explores the differences between adult and juvenile practices.

## **CJA-203** Crisis Intervention

3 credits, Winter

Examines crisis intervention as it applies to emergency service workers. Includes the psychodynamics of family crisis; alcohol/drug related problems; suicide; sexual assault victims; domestic violence; mentally disturbed individuals; neglected, battered, and abused children.

## **CJA-206** Trauma Informed Practices

3 credits, Fall/Spring

In this course, students will learn how to recognize and respond to the impact of traumatic stress. Students will gain knowledge and skills they can infuse into their practices and act in a way that maximizes physical and psychological safety for clients and themselves. Students will understand how trauma impacts the brain, body, as well as development. Topics such as vicarious trauma, cultural trauma, and secondary trauma will be examined and discussed.

Recommended Prerequisites: CJA-101 or HS-100 or any other 100-level course that discusses human behavior, development, or social interactions

## **CJA-210** Criminal Investigation I

3 credits, Fall

Introduces the history, theory and principles of criminal investigation in the criminal justice system. Describes crime scene investigation and courtroom aspects of crime scenes including interviews, evidence, follow-up, case preparation, and investigative techniques.

Prerequisites: CJA-110 with a C or better



**CJA-211 Criminal Investigation II**

3 credits, Winter

Continues the study and application of investigative techniques for specific offenses, including: death investigations, domestic violence, elder abuse and sexual offenses. Identifies similarities, differences, and elements of proof needed under state statutes and documentation of investigations through comprehensive reports.

Prerequisites: CJA-210 with a C or better

**CJA-212 Criminal Investigation III**

3 credits, Spring

Continues the study and application of investigative techniques acquired in CJA-210 and CJA-211. Includes hands-on application of investigative processes from a practical aspect, including search warrant writing, fingerprinting, evidence collection, and crime scene photography, diagramming, and reconstruction.

**CJA-213 Interview & Interrogation**

3 credits, Not Offered Every Year

Examines the dynamics of interviews and interrogations including common processes, approaches and techniques. Ethical, legal and psychological issues are also considered. Includes methods of how to analyze statements and behavior for deception and truthfulness.

**CJA-214 Intimate Partner Violence**

3 credits, Fall

This course will analyze the historical, social, legal, and psychological aspects of Intimate Partner Violence. Includes definitions of the problem, demographics, survivors, perpetrators, children who witness, strategies and tactics of abuse and survival, and core strategies for legal intervention.

Prerequisites: CJA-203 or HS-100

**CJA-215 Sexual Abuse and Human Trafficking**

3 credits, Fall/Spring

This course will explore various aspects of sexual abuse cases and human trafficking in the state of Oregon and the U.S., including discussion of societal and historical perspectives, responses to victim trauma, sexual offenders and law enforcement response to these crimes.

**CJA-216 Implicit Bias and Policing**

3 credits, Spring

This course explores the concept of implicit bias and the potential influence of bias in law enforcement decision-making. Provides an overview of implicit bias assessments and their limitations. Students will develop skills to recognize and take action to manage bias and identify law enforcement practices that reduce bias and positively influence community relations.

**CJA-222 Procedural Law**

3 credits, Winter

This course discusses the constitutional and statutory provisions related to arrest, search and seizure. The course includes use of deadly force, admissions, interrogations, plain view limitations, law of stop and frisk, and officer testimony.

Prerequisites: CJA-122 with a C or better

**CJA-223 Criminal Justice Ethics**

3 credits, Fall

Surveys common ethical frameworks and then examines ethical issues, questions, challenges and consequences facing criminal justice professionals, including law enforcement, corrections, the courts and others.

**CJA-232 Case Management**

3 credits, Spring

Introduces case management techniques used by corrections and human services professionals in one-on-one and group contacts with clients. Explores a variety of case management materials, with an emphasis placed upon objective case planning and monitoring.

Prerequisite or Corequisite: HS-156 and HS-210

**CJA-250 Reporting, Recording & Testifying**

4 credits, Spring

Surveys documentation skills in criminal justice professions. Verbal, nonverbal and written forms of criminal justice related workplace communication are studied and practiced, including communicating with the public, basic interviewing, documentation, courtroom testimony, and report writing.

Prerequisites: WR-121Z with a C or better

**CJA-252 Introduction to Restorative Justice**

3 credits, Fall

Provides a critical introduction to restorative justice. Covers fundamental values and principles of restorative justice, and the experience and interests of key stakeholders (victims, offenders, communities, and systems).

**CJA-270 Criminal Justice Capstone**

3 credits, Spring

This course applies and assesses the knowledge and skills gained by students who are completing the criminal justice program. Students will complete analyses of second year criminal justice courses, will review program learning outcomes, complete and present an e-portfolio, and take an exit examination.

Prerequisites: CJA-170

**CJA-280 Criminal Justice/Corrections/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Supervised experience in criminal justice, corrections, juvenile corrections, or related occupations. Variable Credit: 2-6 credits. May be repeated for up to 6 credits. Required: Student Petition.

Prerequisites: CJA-170

Corequisites: CWE-281

**CJA-281 Criminal Justice/Corrections/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Supervised experience in criminal justice, corrections, juvenile corrections, or related occupations. Variable Credit: 2-6 credits. May be repeated for up to 6 credits. Required: Student Petition.

Prerequisites: CJA-170 and CJA-280

Corequisites: CWE-281

**CJA-290 Issues in Criminal Justice**

1-3 credits, Not Offered Every Term

This course gives students an opportunity to gain knowledge in a specific area relevant to the field of criminal justice. This topic will be pulled from a comprehensive list of areas identified by criminal justice and corrections professionals as having importance for students pursuing work in the field. Variable Credit: 1-3 credits. May be repeated for up to 6 credits.

## Dental Assistant (DA)

### DA-101 Dental Radiology I

2 credits, Fall

Introduction to history and principles of dental radiology, terminology, and basic physics associated with x-rays, biological effects of x-rays, anatomical landmarks and infection control. Required: Student Petition. Required: Acceptance into Dental Assistant program  
Corequisites: DA-101L

### DA-101L Dental Radiology I Lab

1 credits, Fall

This course covers practical instruction in radiation health and safety, types of films, film holders, processing and mounting of dental films, use of x-ray equipment, infection control techniques, disposal of hazardous waste. Introduces the use of digital radiation. All exposure techniques performed on x-ray manikins. Required: Student Petition. Required: Acceptance into Dental Assistant program  
Corequisites: DA-101

### DA-102 Dental Radiology II

2 credits, Winter

Alternative radiographic techniques are discussed as students develop their knowledge in the following areas: bisecting, extra-oral radiography, techniques for children, and patients with special needs. This course provides an in-depth study of the purpose and uses of panoramic imaging, digital imaging, three-dimensional digital imaging, and occlusal examinations. Identification of radiographic interpretation and infection control procedures will also be covered. Required: Student Petition. Required: Acceptance into Dental Assistant program  
Prerequisites: DA-101 with a C or better  
Corequisites: DA-102L

### DA-102L Dental Radiology II Lab

1 credits, Winter

Knowledge and skills in alternative radiographic techniques are taught as students demonstrate exposure techniques and corrective measures of various alternative radiographic techniques. Students meeting radiographic proficiency on the x-ray mannequin prepare for the Radiation Health and Safety (RHS) proficiency exam. Candidates for the RHS proficiency exam will follow all RHS, Dental Assisting National Board (DANB) and Oregon examination requirements in preparation of patient radiographs. Required: Student Petition. Required: Acceptance into Dental Assistant program  
Prerequisites: DA-101 with a C or better  
Corequisites: DA-102

### DA-104 Clinical Procedures I

2 credits, Fall

Discussion in the practice of patient care including the collection of patient medical and dental histories and maintenance of accurate treatment records. Explores the history of dentistry, dental ethics, law, and HIPAA. The dental healthcare team, dental office design and the dental profession will also be discussed. Required: Student Petition. Required: Acceptance into Dental Assistant program  
Corequisites: DA-104L

### DA-104L Clinical Procedures I Lab

1 credits, Fall

This course prepares the student for basic chairside assisting and general procedures. Application of essential skills in seating and dismissing patients, ergonomics, taking and recording vital signs, and infection control are taught and practiced in a dental laboratory setting. Required: Student Petition. Required: Acceptance into Dental Assistant program  
Corequisites: DA-104

### DA-105 Clinical Procedures II

2 credits, Winter

A foundational course in preventive dentistry. Examines the study of preventive education, oral hygiene instruction, nutrition, fluoride agents, coronal polishing and sealants. The continuation of oral evacuation and isolation techniques will also be covered. Required: Student Petition. Required: Acceptance into Dental Assistant program  
Prerequisites: DA-104 with a C or better  
Corequisites: DA-105L

### DA-105L Clinical Procedures II Lab

1 credits, Winter

Further the development of chairside skills and introduces the application of preventive procedures such as coronal polishing, fluoride treatment and oral hygiene instruction. Basic knowledge in the application of dental sealants is also taught. Lab skills such as the placement and removal of matrix retainers and rubber dams are taught to provide preparation for chairside dental assisting functions. Aseptic procedures are practiced during all lab skills. Required: Student Petition. Required: Acceptance into Dental Assistant program  
Prerequisites: DA-104L with a C or better  
Corequisites: DA-105

### DA-106 Clinical Procedures III

2 credits, Spring

This course provides an in-depth knowledge of dental specialties. Advanced and expanded dental assisting functions, tray set-ups and procedures in endodontics, periodontics, oral surgery, orthodontics and pedodontics are covered. Principles and procedures for amalgam and composite polishing will also be covered. Required: Student Petition. Required: Acceptance into Dental Assistant program  
Prerequisites: DA-105 with a C or better  
Corequisites: DA-106L

### DA-106L Clinical Procedures III Lab

1 credits, Spring

This course covers advanced and expanded dental assisting procedures in dental specialties. Tray set-up, dental materials and specific specialty procedures will be covered in the following dental specialties: orthodontic, periodontics, oral surgery and endodontics. Laboratory instruction in study casts, amalgam, and composite polishing will be taught on dental manikins. Required: Student Petition. Required: Acceptance into Dental Assistant program  
Prerequisites: DA-105L with a C or better  
Corequisites: DA-106

### DA-107 Dental Materials I

2 credits, Fall

This course is an in-depth level of instruction in the composition and manipulation of dental restorative materials, and dental cements. Examination of general dentistry and chairside assisting with direct permanent restorations such as amalgam and composite will also be covered. Required: Student Petition. Required: Acceptance into Dental Assistant program  
Corequisites: DA-107L

**DA-107L Dental Materials I Lab**

1 credits, Fall

This course covers the application of the essential skills necessary in assisting with amalgam and composite restorations. Covers tray-set-ups, pre and post-operative instructions, instrument transfer, and oral evacuation with amalgam and composite procedures. The identification and application of dental cements used in general dentistry will also be covered. Includes manipulation, storage and disposal of hazardous dental materials and cements. Required: Student Petition.

Required: Acceptance into Dental Assistant program

Corequisites: DA-107

**DA-108 Dental Materials II**

2 credits, Winter

This course focuses on in-depth knowledge of the properties, uses and manipulation of impression materials, gypsum products and waxes. Foundational knowledge will prepare students for the fabrication of custom trays, bleaching trays, and provisional restorations. Includes knowledge of fixed and removable prosthodontic procedures and rationale for polishing removable appliances. An overview of dental implants will also be covered. Required: Student Petition.

Required: Acceptance into Dental Assistant program

Prerequisites: DA-107 with a C or better

Corequisites: DA-108L

**DA-108L Dental Materials II Lab**

1 credits, Winter

Essential skills in the manipulation and application of dental impression materials, gypsum products and waxes will be covered. Thorough knowledge of laboratory skills in the fabrication of bleaching trays and provisional restorations will be taught. Demonstration of custom trays and uses are introduced. The instrumentation and procedures for fixed and removable prosthodontics will also be covered. Required: Student Petition.

Required: Acceptance into Dental Assistant program

Prerequisites: DA-107L with a C or better

Corequisites: DA-108

**DA-110 Clinical Practicum I**

1 credits, Fall

Clinical practicum begins in the seventh week of class. Students begin to apply basic dental assisting procedures taught in weeks one through six. OSHA, hazard communication and infection control are followed for student and patient safety. A minimum of 8 supervised unpaid hours per week is required for term one practicum. Students will participate in one seminar held prior to clinical practicum. Required: Student Petition.

Required: Acceptance into Dental Assistant program

**DA-115 Dental Science**

2 credits, Fall

Introduction and general study of anatomy, physiology, and oral pathology. An in-depth level course of study in oral anatomy, histology and embryology. Introduction to charting will also be covered. Required: Student Petition.

Required: Acceptance into Dental Assistant program

**DA-120 Clinical Practicum II**

5 credits, Winter

Supervised unpaid practice and improvement of clinical skills taught in clinical procedures, dental materials and radiology. Covers advanced Expanded Functions Dental Assisting (EFDA) skills. Implement infection control protocols. Introduce basic business office procedures. Ten hours of community service will be required. Participate in two seminars during the term. Required: Student Petition.

Required: Acceptance into Dental Assistant program

Prerequisites: DA-110 with a C or better

**DA-125 Dental Infection Control**

2 credits, Fall

This course covers the introduction and general study of microbiology, major groups of microorganisms, viral and bacterial diseases. Disease transmission, infection prevention, disinfection and instrument processing techniques will also be covered. An in-depth level of the Bloodborne Pathogens Standards and Hazard Communication will be taught and integrated throughout the didactic, preclinical, laboratory and clinical course of study. Required: Student Petition.

Required: Acceptance into Dental Assistant program

**DA-130 Clinical Practicum III**

8 credits, Spring

Supervised practice and improvement of advanced clinical skills in all areas of chairside dental assisting, laboratory procedures, specialties, radiology and Expanded Functions Dental Assisting (EFDA) procedures. Students report to their assigned site three days a week, for a minimum of twenty-four hours per week, for eleven weeks. Clinical competency skills in business office procedures will also be completed in this term (minimum of forty-four hours). Students will be responsible to meet ten hours of community service. Students will also participate in two seminars during the term. Required: Student Petition.

Required: Acceptance into Dental Assistant program

Prerequisites: DA-120 with a C or better

**DA-135 Pharmacology/Medical Emergencies**

2 credits, Spring

This course is an introduction to pharmacology, common drugs used in dentistry, drug agencies, regulations, and drug actions. The properties of anesthetic, topical anesthetics, and desensitizing agents will also be covered. An in-depth level knowledge of the identification, response and management of medical and dental emergencies in the dental office will be taught utilizing educational manikin simulators. Required: Student Petition.

Required: Acceptance into Dental Assistant program

**DA-145 Dental Office Procedures**

2 credits, Spring

This course prepares the student for basic knowledge of dental office procedures to include dental charting. Introduction of dental software, management of patient information, maintenance and retention of business records, inventory and recall systems. Written and oral communication are taught to prepare students for employment opportunities. Required: Student Petition.

Required: Acceptance into Dental Assistant program

## Digital Media Communications (DMC)

### **DMC-100** Introduction to Media Arts

3 credits, Fall

Presents an overview of career opportunities in the media industry. Introduces basic principles common to success in the media industry, common media industry entrance strategies, health and safety best practices and the history of the industry from film to online media. In addition, this course will cover basic theories behind what shapes and drives the media industry.

### **DMC-104** Digital Video Editing

4 credits, Fall/Winter/Spring

Students will utilize video editing skills. These skills will include logging and capturing raw video, assembly of shots on a time line, and the use of effects in the creation of a final video sequence. Along with text generation, audio balancing, audio sweetening and video compositing, this course will offer students an in-depth overview of the video editing process. Course will explore the history of film editing and the theory behind various forms of film and video editing. Lab component included. Recommended Prerequisites: WRD-090 or placement in WR-121Z

### **DMC-106** Animation & Motion Graphics I

4 credits, Fall/Winter

Introduction to the fundamentals of animation and motion graphics design. This project-based course will explore experimental and new technological approaches to creating digital effects and animation for video and web-based applications. Students will learn the basics of industry standard 3D and compositing software to create successful VFX, 3D Animation, and Motion Graphics projects.

Recommended Prerequisites: ART-225 and DMC-104

### **DMC-107** Animation & Motion Graphics II

4 credits, Spring

This project-based course will explore intermediate aspects of experimental and new technological approaches to creating digital effects and animation for video and web-based applications. Students will learn intermediate features of Adobe After Effects to create successful motion graphics projects.

Prerequisites: DMC-106

Recommended Prerequisites: ART-225, DMC-104, and DMC-221. Previous experience with computer graphics and digital video

### **DMC-108** Animation & Motion Graphics III

4 credits, Spring

Continuation of the process of animation and motion graphics design. This project-based course explores advanced aspects of experimental and new technological approaches to creating digital effects and animation for video and web-based applications. The course presents advanced aspects of industry standard 3D and compositing software to create successful VFX, 3D Animation, and Motion Graphics projects.

Prerequisites: DMC-107

### **DMC-109** Introduction to Stop Motion Animation

4 credits, Not Offered Every Year

Introduces basic stop motion animation tools, materials, techniques and elements of storyboarding, scripting, narrative development, compositing, special effects and audio integration into a final group film. Assignments include character development, rigging, set creation, photography, video compositing, and audio recording and synching. Uses digital cameras and industry-standard stop motion software.

Recommended Prerequisites: DMC-106 and ART-225

### **DMC-147** Music, Sound & Moviemaking

1 credits, Fall/Winter/Spring

Presents the basic components of designing, shooting, recording audio, and post production of movies as well as the history and theory that has led to contemporary film production.

### **DMC-205** Directing for Film & Video

4 credits, Winter

This course provides students interested in filmmaking the opportunity to develop the skills needed to successfully direct films and performances specifically for the screen.

Recommended Prerequisites: DMC-104, DMC-264, and WR-121Z

### **DMC-221** Introduction to 2D Animation: Design & Techniques

4 credits, Winter/Spring

Introduces the principles of 2D digital animation using the latest industry standard software. The course will emphasize design and physical principles, analytical skills, and creativity. Students will learn the fundamental principles of animation, character and environment design, FX animation, and basic narrative development, in order to create successful animated projects.

Recommended Prerequisites: ART-225 or equivalent experience

### **DMC-222** Advanced 2D Animation: Design & Techniques

4 credits, Spring

Covers advanced principles of 2D animation using the latest industry standard software. The course will emphasize professional workflow and techniques of animation production for multimedia platforms. This includes visual development and pre-production, advanced character design and physics, advanced environment design, FX animation and post-production, portfolio presentation, and industry expectations.

Prerequisites: DMC-221 or Student Petition

### **DMC-230** Documentary Film Production

4 credits, Not Offered Every Year

Introduction to the concepts, fundamentals and production of documentary film making. This lecture and lab course will explore traditions and new technological approaches to creating digital documentary films.

Recommended Prerequisites: DMC-104 and ENG-194. Previous experience with film studies and digital video

### **DMC-242** Field Recording for Media

1 credits, Spring

This course offers students interested in recording and sweetening audio for film an opportunity to work with student film crews during the shooting and editing process.

### **DMC-247** Sound for Media

3 credits, Fall/Spring

Introduction to sound as related to film making, animation, and video games. Students will have the opportunity to create and assemble sound for media into a finished product. Explores the basic components of commercial film/video, animation, and game production as they relate to sound.

Recommended: Experience using a DAW (Digital Audio Workstation) or video editing software

### **DMC-264** Digital Filmmaking

4 credits, Fall

Explores the process of translating a written script into a digital film via pre-production, lighting, shooting, and post-video production.

Recommended Prerequisites: WRD-090 or placement in WRD-098, WRD-098 or placement in WR-121Z, or Student Petition

**DMC-265** Advanced Digital Filmmaking

4 credits, Spring

This course emphasizes advanced filmmaking skills. Students will produce short films from written scripts.

Prerequisites: DMC-104 or Student Petition

Recommended Prerequisites: WRD-090 or placement in WRD-098, WRD-098 or placement in WR-121Z

**DMC-280** Digital Media Communications/CWE

3-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job work experience in the field of media studies. Variable Credit: 3-6 credits.

Required: Student Petition.

Corequisites: CWE-281

**DMC-291** Digital Media Communications Portfolio Project I

4 credits, Winter

This course is an individual portfolio project class for Digital Media Communications (DMC) students. Students create an original finished work representative of one of the focus areas included in the DMC program. Students will develop a professional online portfolio (website) that represents their skills in their chosen DMC focus area in preparation for internships and employment. The process of portfolio production at this level includes planning for, refining and completing a project, presentation of the completed work, and project assessment.

Prerequisites: DMC-100 and DMC-104

Recommended: Two courses from a DMC Focus Area

**DMC-292** Digital Media Communications Portfolio Project II

4 credits, Spring

This course is a group-focused portfolio project class for Digital Media Communications (DMC) students. The purpose of this course is to provide students the opportunity to combine their skills, knowledge, and special interests in development of a collaboratively planned and produced original work representative of more than one of the focus areas in the DMC program. The process of portfolio production at this level includes working with peers in designing, planning, refining and completing a group project. Students will also further develop their professional online portfolio (website) to represent their skills in their DMC focus area in preparation for internships and employment.

Prerequisites: DMC-291

## Early Childhood Education (ECE)

**ECE-114ES** Matemáticas y ciencias para niños pequeños

4 credits, Spring

Este curso se enfoca en el aprendizaje de matemáticas y ciencias para niños pequeños. Se explorarán los componentes de matemáticas y ciencias. Se hará hincapié en las estrategias de enseñanza apropiadas para promover el conocimiento de las matemáticas y las ciencias en los niños. Se explorará el entorno físico del salón de clase para que éste fomente el aprendizaje de las matemáticas y las ciencias.

**ECE-121** Observation and Guidance I in ECE Settings

4 credits, Winter

Course is designed to help students explore in depth observation and recording techniques of children's development and learning and to examine various child guidance techniques for children from birth - 3rd grade. Students will be provided with strategies to assist them in providing positive guidance to children in a variety of settings and situations.

**ECE-121ES** Observación y Orientación I en Educación Temprana

4 credits, Winter

El curso está diseñado para ayudar a los estudiantes a explorar en profundidad las técnicas de observación y registro del desarrollo y aprendizaje de los niños. Se examinan varias técnicas de orientación infantil para niños desde el nacimiento hasta el 3er grado. Los estudiantes recibirán estrategias para ayudarles a proporcionar orientaciones positivas a los niños en función de diferentes de escenarios y situaciones.

**ECE-139** Program Management in ECE

1 credits, Not Offered Every Term

Focuses on planning and evaluating an early childhood program's specific goals (short and long term) for working with children and their families. Emphasis on administrative tasks such as meeting state and national standards and requirements, maintaining records, and striving for continuous improvement in program quality.

**ECE-142** Media, Technology and the Influences on Child Development

1 credits, Not Offered Every Term

Focuses on the implementation and influences of media and technology on the development of the young child. Emphasizes analysis of media and technology tools for effectiveness in supporting the development of young children.

**ECE-143** Kindergarten Readiness

1 credits, Not Offered Every Term

Introduces core concepts of kindergarten readiness, including outcomes that are focused on in Pre-K as well as strategies for children as they prepare for kindergarten.

**ECE-150** Introduction to Early Childhood Education & Family Studies

4 credits, Fall

Focuses on the history of early childhood education and the prominent theorists that have significantly contributed to the field. The types of programs that serve young children, birth-age 8, and their families will be examined. State and national standards in early childhood education and family studies will be explored.

**ECE-150ES** Introducción a la educación infantil y los estudios familiares

4 credits, Fall

Este curso se enfoca en la historia de la educación infantil y los teóricos más importantes que han contribuido significativamente al campo. Se examinarán los tipos de programas que atienden a niños pequeños, desde el nacimiento hasta los 8 años, y sus familias. Se explorarán los estándares estatales y nacionales en educación infantil y estudios familiares.

**ECE-154** Language & Literacy Development in Young Children

4 credits, Winter

Focuses on language and literacy development of children from birth-age 8. The research foundation and components of language and literacy development will be examined. Criteria for selecting quality children's literature will be explored. Practical strategies for promoting optimal development will be emphasized. Students will explore how to set create language and literacy-rich environments and experiences.

**ECE-154ES** Desarrollo del Lenguaje y la Alfabetización

4 credits, Fall

Se centra en el desarrollo del lenguaje y la alfabetización de los niños desde el nacimiento hasta tercer grado. Se examinarán las bases de la investigación y los componentes del desarrollo del lenguaje y la alfabetización. Se explorarán los criterios para seleccionar literatura infantil de calidad. Se enfatizarán estrategias prácticas para promover un desarrollo óptimo.



**ECE-169ES** Trabajar con Niños con Necesidades Especiales

4 credits, Winter

Explora prácticas inclusivas para niños con necesidades especiales, desde el nacimiento hasta el tercer grado, en diferentes entornos de desarrollo infantil entornos de primera infancia. Este curso incluirá una exploración de lo siguiente: historia y contexto legal de la educación especial de la primera infancia; la importancia y los beneficios de crear entornos familiares para apoyar el desarrollo educativo de los niños; adaptaciones y adaptaciones curriculares; evaluación y seguimiento del progreso; y promoción.

**ECE-179** The Professional in Early Childhood Education and Family Studies

4 credits, Fall

This course focuses on the role of the professional in Early Childhood Education (ECE). Students will explore the National Association for the Education of Young Children's Code of Ethical Conduct, the professional standards and competencies expected for ECE professionals. Students will discuss advocacy strategies and how to engage in intentional, reflective practice. Students will also create a professional portfolio to demonstrate their commitment to professionalism.

Prerequisites: ECE-121, ECE-150, ECE-240, ECE-280, and ED-246

**ECE-179ES** El Profesional en Educación Infantil

4 credits, Fall

Se enfoca en el rol del profesional en Educación Infantil (ECE) y se explorará los estándares y competencias profesionales de NAEYC para maestros de la primera infancia. Los estudiantes recibirán información sobre el Código de Conducta y Ética profesional de la Asociación Nacional para la Educación de Niños Pequeños así como también la información sobre lo que significa ser un Profesional de ECE y cómo abogar para los niños y las familias.

Prerequisites: ECE-121ES, ECE-240ES, ECE-246ES, and ECE-280ES

**ECE-221** Observation & Guidance II in ECE Settings

4 credits, Fall

Designed to help students explore in greater depth the observation and guidance of children from birth-3rd grade within the classroom environment. In this more advanced course, the student focuses on additional observation and guidance techniques for observing groups of children and addresses challenging behaviors and other issues within the early childhood environment. The practitioner's role in using observation to promote their own development and to assist in the development of the children is explored in depth.

Prerequisites: ECE-121

**ECE-221ES** Observación y Orientación II en Educación Temprana

4 credits, Fall

Diseñado para ayudar a los estudiantes a explorar con mayor profundidad la observación y la orientación de los niños desde el nacimiento hasta el tercer grado dentro del entorno del aula. En este curso más avanzado, el estudiante se enfoca en técnicas adicionales de observación y orientación para observar grupos de niños y aborda comportamientos desafiantes y otros problemas dentro del entorno de la primera infancia. Se explora en profundidad el papel del profesional en el uso de la observación para promover su propio desarrollo y ayudar en el progreso de los niños.

Prerequisites: ECE-121ES

**ECE-235** Safety, Health and Nutrition

3 credits, Fall

Explores safety, health and nutrition issues for children ages infant through preschool. Focus includes creating safe indoor and outdoor environments, healthy lifestyle practices, caring for children with special healthcare needs, USDA food program requirements, and state guidelines around safety, health and nutrition requirements.

**ECE-235ES** Seguridad, Salud, y Nutrición

3 credits, Winter

Este curso explora temas de seguridad, salud y nutrición para niños desde bebés hasta la edad de cinco años. El enfoque incluye la creación de ambientes seguros al interior como el exterior, prácticas para llevar us estilo de vida saludable, cuidado de niños con necesidades especiales médicas, requisitos del programa de alimentos del USDA y pautas estatales sobre los requisitos de seguridad, salud y nutrición.

**ECE-239** Trauma-Informed Practices in Early Care and Education

3 credits, Spring

Develops knowledge and skills that support the learning and development of young children, birth to age 8, who have been adversely impacted by trauma. Explores types and symptoms of trauma, and emphasizes trauma-informed practices that can be applied in the child's home and school setting. Identifies available resources and recognized strategies for working collaboratively with families and other professionals.

**ECE-239ES** Prácticas informadas por el trauma en el cuidado y la educación de la primera infancia

4 credits, Winter

Desarrollar conocimientos y habilidades que apoyen el aprendizaje y el desarrollo de niños pequeños, desde el nacimiento hasta los 8 años, que han sido negativamente afectados por traumas. Explorar los tipos y síntomas del trauma, y hacer hincapié en las prácticas informadas por el trauma que pueden aplicarse en el hogar y el entorno escolar del niño. Identificar los recursos disponibles y las estrategias reconocidas para trabajar en colaboración con las familias y otros profesionales.

**ECE-240** Environments and Curriculum Planning

4 credits, Spring

Focuses on an introduction of creating learning environments and curriculum for children from three years old through five years old in home or center-based programs. Course covers theories and relationships between physical and social space, activities, experiences, and materials. Students are introduced to the use of developmentally and culturally appropriate practices in planning and selecting environments and curriculum for young children.

**ECE-240ES** Ambientes y Planificación Curricular

4 credits, Spring

Se enfoca en una introducción a la creación de entornos de aprendizaje y planes de estudio para niños de tres a cinco años de edad en programas basados en hogares o centros. El curso cubre las teorías y las relaciones entre el espacio físico y social, las actividades, las experiencias y los materiales. Se enseña a los estudiantes el uso de prácticas adecuadas para el desarrollo y la cultura en la planificación y la selección de entornos y planes de estudio para niños pequeños.

**ECE-241** Environments and Curriculum Planning: Infants and Toddlers

3 credits, Fall

Builds upon knowledge and skills learned in ECE-240: Environments and Curriculum Planning. Emphasis is on application of research-based strategies to implement and evaluate early childhood environments and curriculum for children from birth-three years old. Focus is on integrating content knowledge throughout all classroom activities.



**ECE-241ES** Ambientes y Planificación Curricular para Bebés y Niños Pequeños

4 credits, Fall

Este curso se enfoca en la aplicación de estrategias basadas en la investigación para implementar y evaluar los entornos y el plan de estudios de la primera infancia para niños desde el nacimiento hasta los tres años de edad. El enfoque está en integrar el conocimiento del contenido en todas las rutinas y experiencias en el aula.

**ECE-246ES** Relaciones entre la escuela, la familia y la comunidad

4 credits, Spring

Este curso se concentra en el conocimiento y las habilidades para trabajar eficazmente con las familias y la comunidad y con otros profesionales en educación infantil (6 semanas de edad hasta tercer grado). El énfasis está en construir y mantener relaciones positivas para fomentar la cooperación y el respeto mutuo entre los profesionales en la primera infancia y las familias de los niños con quienes trabajan.

**ECE-254ES** Estrategias de Instrucción para Estudiantes de Dos Idiomas

4 credits, Winter

Este curso examina enfoques pedagógicos y culturales que conducen a un desarrollo exitoso del dominio del idioma inglés, idioma usado en la casa, y reconocimiento del contenido por los niños cuyo idioma en el hogar no es el inglés. Se enfoca en el niño desde su nacimiento hasta la escuela primaria.

**ECE-258ES** Equidad y Diversidad en La Educación Infantil

4 credits, Spring

Este curso se enfoca en promover y honrar la diversidad y la equidad en la educación infantil. El enfoque será en colaborar con familias diversas, establecer ámbitos culturales y lingüísticos que sean diversificados y promuevan una autoidentificación positiva en los niños pequeños.

**ECE-280** Early Childhood Education/CWE

3 credits, Summer/Fall/Spring

Cooperative work experience. Provides students with on-the-job experience in the field of early childhood education. Students will work in pre-approved educational settings that serve children from six weeks old through age eight. Required: Student Petition.

Prerequisites: ECE-121, ECE-150, and ECE-154

Corequisites: CWE-281

**ECE-280ES** Experiencia Laboral Cooperativa

4 credits, Summer/Fall/Spring

En este curso, los estudiantes completan 144 horas de trabajo en un entorno de primera infancia, asistiendo a niños y familias desde el nacimiento hasta los 8 años de edad. Si no completan las horas requeridas, recibirá un curso incompleto o reprobará.

**ECE-291** Practicum II

4 credits, Winter

Focuses on field experience for students in a variety of educational settings, paralleling duties regularly assigned to early childhood educators. This course allows students to apply knowledge, methods, and skills gained from early childhood education and family studies courses. The seminar covers classroom experiences, best practices and assessment techniques. Required: Student Petition.

Prerequisites: ECE-121, ECE-150, ECE-280, HDF-225, and HDF-247

**ECE-291ES** Practicum II

4 credits, Winter

Se enfoca en permitir que los estudiantes tengan una experiencia laboral en una variedad de entornos educativos, al mismo tiempo que hacen las tareas asignadas regularmente a los educadores de la primera infancia. Este curso permite a los estudiantes aplicar los conocimientos, métodos y habilidades adquiridos en los cursos de educación infantil y estudios sobre las familias. El seminario cubre las experiencias en el aula, las mejores prácticas y los métodos de evaluación.

Prerequisites: ECE-121ES, ECE-150ES, ECE-179ES, ECE-240ES, ECE-280ES, HDF-225ES, and HDF-247ES

**ECE-292** Practicum III

4 credits, Spring

Focuses on field experiences for early childhood education students in a variety of educational settings, serving children from birth through kindergarten. This course allows students to deepen and apply their knowledge, methods, and skills gained from early childhood education and family studies courses as well as the previous terms of practicum and CWE. The seminar covers continuing observation/assessment, assisting the supervising teacher in implementing an integrated approach to curriculum with attention paid to working with diverse children and their families. Students will complete their professional portfolio in this course, documenting how they have achieved the program learning outcomes. Required: Student Petition.

Prerequisites: ECE-154, ECE-221, ECE-240, ED-254, and ECE-291

**ECE-292ES** Practicum III

4 credits, Spring

Este curso se enfoca en la experiencia de trabajo de los estudiantes con varios entornos educacionales en salones de clases enfocadas directamente con la enseñanza y supervisión de niños desde el nacimiento hasta el kínder. Este curso permite a los estudiantes aplicar conocimientos y metodologías adquiridas en los cursos de educación infantil, y sean transferibles a las habilidades requeridas en un ambiente educacional entre 0 a 8 años de edad. Los seminarios obligatorios abarcan la revisión de los dominios del desarrollo, los ámbitos de aprendizaje, las experiencias reales en el salón de clases, resolución de problemas, desarrollo del plan de estudios, técnicas de evaluación y la orientación del aprendizaje y la conducta de los niños.

Prerequisites: ECE-291ES

## Economics (EC)

**EC-201** Principles of Economics: Micro

4 credits, Fall/Winter/Spring/Summer

Focuses on microeconomic theory dealing with the behavior of individuals and profit-maximizing firms in market structures with varying degrees of competition. Coverage includes price theory, international trade, consumer behavior, the theory of the firm, and the potential role of government in affecting market outcomes.

Prerequisites: MTH-020 or placement in MTH-098

Prerequisite or Corequisite: WRD-098 or placement in WR-121Z

**EC-202** Principles of Economics: Macro

4 credits, Fall/Winter/Spring/Summer

Introduction to economic theory, policy, and institutions. Focuses on macroeconomic theory, money, unemployment, inflation, fiscal and monetary policies, international finance, and economic growth.

Prerequisites: MTH-020 or placement in MTH-050 or MTH-060

Prerequisite or Corequisite: WRD-098 or placement in WR-121Z

## Education (ED)

### ED-101 Intro to Education Practicum & Seminar

4 credits, Fall/Winter/Spring

This seminar presents critical topics associated with the Education profession. Each topic will be introduced with an understanding that future Education classes will expand student comprehension and knowledge to a mastery level. Students are also required to participate in a 60 hour practicum experience in a K-12 school to provide the opportunity to gain experience with the various educational issues discussed in class. Required: Student Petition.

### ED-113 Instructional Strategies for Literacy

3 credits, Fall

This course develops an understanding of how to integrate literacy concepts and skills into all subjects. Curriculum design and assessment for Reading and Language Arts concepts and skills are explored, identified, and developed. Emphasis is placed on the role of literacy in the development of the whole student and on linking CTE curriculum to the literacy skills needed for students to be successful in their field. Designed for CTE instructors, but anyone interested in teaching literacy across the curriculum would benefit from this class.

### ED-114 Instructional Strategies for Math

3 credits, Fall

This course develops an understanding of how to integrate math concepts and skills into Career and Technical Education (CTE) courses and programs. Curriculum design and assessment for math concepts and skills are explored, identified, and developed. Designed for CTE instructors, but anyone interested in bringing more math into their classrooms could benefit from this class. Emphasis is placed on the role of math in the development of the whole student and on linking the CTE curriculum to the mathematics needed for students to be successful in their field.

### ED-130 Comprehensive Classroom Management

3 credits, Fall

This course focuses on creating positive classroom and school climates, organizing and managing classrooms, improving instruction, dealing with classroom discipline problems, developing individualized plans for students experiencing behavioral problems, and developing school-wide student management programs-characteristics of effective schools and teachers.

### ED-131 Instructional Strategies

3 credits, Winter

This course examines the knowledge, skills, and characteristics of effective teachers. The focus of the course is on successful instructional planning and the delivery of curriculum. This course covers teacher-centered and student-centered instructional strategies and ways to differentiate instruction for diverse learners.

### ED-150 Creative Activities for Children

3 credits, Not Offered Every Term

The class focuses on understanding and implementing a developmental approach to creative activities for young children; involves hands-on experience with a variety of mediums including art, music and movement, and creative dramatics.

### ED-169 Overview of Students With Special Needs

3 credits, Winter

Provides an introduction to the categories of disability described in the Individuals with Disabilities Education Act (IDEA). Topics include definitions under federal law, implications in school settings, and intervention strategies to meet students' special needs.

### ED-216 Foundations of Teaching & Education

4 credits, Fall/Winter/Spring

Provides an overview of the educational system in the U.S. including historical, legal, and philosophical foundations of education. Explores the financing, governance and organization of education as well as current issues impacting our educational system. Provides an overview of diversity in educational settings and the characteristics and ethical obligations of effective schools and professional educators. Examines career options and pathways in the field of education.

### ED-220 Introduction to CTE in Oregon

3 credits, Fall/Spring

Provides an introduction to the field of Career and Technical Education (CTE) in Oregon. Examines the historical and legislative foundations of CTE in the United States. Discusses the role of special populations in CTE programs. Provides an overview of high quality CTE programs, CTE licensure preparation, and student organizations. Addresses current trends and issues in the field.

### ED-229 Learning & Development

3 credits, Winter

Focuses on foundational ideas, concepts, principles, and theories in the field of educational psychology that have a significant influence on educational practice. Provides students with an overview of psychological theories regarding human development, intelligence, motivation, and the learning process. Students learn how to apply strategies and techniques derived from these theories in the classroom.

### ED-246 School, Family & Community Relations

4 credits, Spring

This course focuses on the knowledge and skills to work effectively with families and community professionals in early childhood education (6 weeks of age through 3rd grade). Emphasis is on building and maintaining positive relationships to foster cooperation and mutual respect between early childhood professionals and the families of the children with whom they are working.

### ED-254 Instructional Strategies for Dual Language Learners

3 credits, Winter

Examines pedagogical and cultural approaches which lead to successful development of English language skills and content knowledge for children who speak a home language other than English.

### ED-258 Culturally Responsive Teaching & Education

3 credits, Spring

Explores historical and systemic inequities in U.S. society and how they impact students, schools, and communities. Provides an overview of the ways in which educators can select culturally appropriate pedagogy, materials, and curriculum in order to serve the needs of an increasingly diverse U.S. educational system. Applies this knowledge in creating classrooms and schools where all students, families, and communities are valued, belong, and thrive.

### ED-280 Practicum/CWE

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Supervised practicum in an elementary, secondary, or post-secondary educational setting. Participants will utilize and develop knowledge, skills, and attitudes relevant to working in schools and with students. Allows students to gain classroom experience and apply knowledge gained in education courses. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

## Educational Focus Area (EFA)

**EFA-101C** Introduction to the Creative Arts Communication and Humanities

2 credits, Not Offered Every Term

This course engages students in the creative process of making meaning within the creative arts, communications, and humanities, and invites them to view themselves, others, and the world through story, while discovering academic and career possibilities.

**EFA-101J** Introduction to the Social Sciences, Human Services and Criminal Justice

2 credits, Fall/Winter/Spring

Introduces career options and educational pathways in the fields of the Social Sciences, Human Services and Criminal Justice. Explores the history of and current methods and issues in these three areas of learning and service. Students will gain an understanding of academic and career options and get a taste of what further study will look like in each of these three areas and how they relate to one another.

**EFA-101N** Introduction to Natural Resources

1 credits, Not Offered Every Term

Course will highlight exciting career options within the natural resources educational focus area. Students will learn about academic disciplines within horticulture, arboriculture, landscaping, organic farming, wildland fire, forestry and water and environmental technology.

**EFA-101S** Introduction to STEM

2 credits, Fall

This course will feature activities, demonstrations, and real world experiences in STEM fields, including environmental science, biology, chemistry, geology, physics, engineering, computer science, and mathematics. Students will gain an understanding of academic and career options and get a taste of what further study will look like in each STEM discipline.

## Electronics & Microelectronics (SM)

For additional information contact the Industrial Technology Department at 503-594-3318.

**SM-136** Photolithography

2 credits, Winter

The course covers the relationship between theoretical and practical aspects of current methods and equipment used in photolithography. It also includes troubleshooting common process and equipment-related problems.

Recommended Prerequisites: SM-150

**SM-150** Semiconductor Processing I

2 credits, Not Offered Every Term

Provides general background knowledge on the processes required to manufacture integrated circuit devices, beginning with silicon material preparation and ending with final assembly and test of a completed device. Micro-contamination is also covered.

**SM-160** Semiconductor Processing II

2 credits, Not Offered Every Term

Provides an overview of basic processes involved in the fabrication of finished silicon wafers, oxidation and deposition processes. Troubleshooting of common equipment is emphasized.

Recommended Prerequisites: SM-150

**SM-170** Semiconductor Processing III

2 credits, Not Offered Every Term

Covers the essential process and equipment issues related to the etching, diffusion and ion implantation. Troubleshooting of common equipment and process related problems are emphasized.

Recommended Prerequisites: SM-150

**SM-229** Vacuum Technology

2 credits, Spring

Focuses on elementary theory and practice of vacuum equipment for microelectronics processing. Students study vacuum fundamentals, pumps, and equipment used in vacuum systems.

Recommended Prerequisites: SM-150

**SM-280** Electronics & Microelectronics/CWE

1-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Practical experience in the high-tech industry. Coordination of instruction will occur with industry and the manufacturing and cooperative work departments. Variable Credit: 1-6 credits. Required: Student Petition.

Corequisites: CWE-281

## Electronics Engineering Technology (EET)

For additional information, contact the Industrial Technology Department at 503-594-3318.

**EET-112** Electronic Equipment and Assembly I

1 credits, Fall

This is the first course in a three course sequence. Focus is on building and testing simple DC prototype circuits. Covers DC power supplies, DMMs, breadboarding, resistor codes, and capacitor codes. Spreadsheets will be used to organize and analyze data.

**EET-113** Electronic Equipment and Assembly II

1 credits, Winter

This is the second course in a three course sequence. Exploration of oscilloscope and function generator functions to create and measure time varying signals. Spreadsheets are used to analyze and plot experimental data. Create circuits using PCB software.

Prerequisites: EET-112

**EET-114** Electronic Equipment and Assembly III

1 credits, Spring

This is the third course in a three course sequence with a focus on soldering skills. Through-hole and SMT techniques will be introduced.

Prerequisites: EET-113

**EET-127** Semiconductor Circuits I

2 credits, Fall

Introduction to the basic concepts of semiconductor devices. Various types of diodes and diode applications will be studied. Industry standard devices will be used.

Prerequisites: EET-142

Recommended Prerequisites: MTH-112Z

**EET-137** Electrical Fundamentals I

4 credits, Fall

Introduction to the basic concepts of voltage, current, resistance and their relationships in DC circuits. Use SI units, engineering notation and prefixes. Analysis of series, parallel and series-parallel circuits will be made using Ohm's & Kirchoff's laws.

Prerequisite or Corequisite: EET-112 and MTH-095

**EET-139 Principles of Troubleshooting I**

2 credits, Fall

Emphasizes theories and practices useful in troubleshooting failures in electrical applications. Focuses on the overall philosophy and strategy of troubleshooting, drawing applications from residential and varied industrial situations. Includes laboratory projects.

Recommended Prerequisite Or Corequisite: EET-112, and EET-137 or MFG-130

**EET-141 Electrical Fundamentals II**

4 credits, Winter

Learn methods of electrical circuit analysis, using proper DC theorems. Study energy storage elements including inductors and capacitors. Transient analysis of RC and RL circuits will be studied.

Prerequisites: EET-137

Prerequisite or Corequisite: EET-113

Recommended Prerequisite Or Corequisite: MTH-111Z

**EET-142 Electrical Fundamentals III**

4 credits, Spring

Covers sinusoidal functions and phasors and complex impedance. Analyze systems to determine AC circuit parameters and complex power. Circuits contain voltage and current sources, resistors, inductors, and transformers.

Prerequisites: EET-141

Recommended Prerequisite Or Corequisite: MTH-112Z

**EET-157 Digital Logic I**

3 credits, Fall

An introduction to digital logic principles, numbering systems & conversions and gate operations. Using principles, circuit analysis will be used to minimize logic networks. Industry standard devices will be used.

Prerequisite or Corequisite: EET-112

Recommended Prerequisites: MTH-065

**EET-215 Technical Mechanics**

3 credits, Fall

Introduction to mechanics. Covers theory of force, work, torque, energy, power, strength, and motion. Vectors and simple machines provide applications for these concepts.

Prerequisites: MTH-080 or MTH-112Z or EET-142

**EET-225 Mechatronics I**

2 credits, Winter

This course explores automation of industrial systems. Students will study the fundamental components of industrial motion control, relay circuits, stepper and servo motors; and power transmission components.

Prerequisites: EET-215

**EET-227 Semiconductor Circuits II**

3 credits, Winter

Second in a series concentrating on the application, design and circuit analysis of circuits using transistors. Industry standard devices will be used.

Prerequisites: EET-127

**EET-233 Programmable Logic Controllers I**

3 credits, Winter

Study of basic skills necessary to program, install and maintain industrial control systems utilizing programmable logic controllers. Course content lays a foundation of hardwired relay control systems and components, and then builds on this for an understanding of programmable logic controller (PLC) systems.

Recommended Prerequisites: MFG-130

**EET-234 Programmable Logic Controllers II**

3 credits, Spring

An advanced course of study that will develop the student's understanding of Programmable Logic Controllers (PLC) in more detailed Industrial applications through lectures, labs and hands-on examples. This course will emphasize advanced PLC functions and data sets, networking schemes and human machine interfaces.

Prerequisites: EET-233

**EET-235 Mechatronics II**

2 credits, Spring

This course expands on advanced electromechanical principles with applications in manufacturing and industrial systems. Students will study the applications of Proportional Integral Differential (PID) controllers for motion and process control and the electromechanical components that are integral to industrial machinery.

Prerequisites: EET-225

**EET-239 Principles of Troubleshooting II**

2 credits, Fall

Covers advanced applications of diagnosis, maintenance and repair of systems. Includes preventative maintenance, applied statistical process, and AC/DC motor controls.

Prerequisites: EET-139; EET-141 or MFG-131

Recommended Prerequisites: IMT-223

**EET-250 Linear Circuits**

3 credits, Spring

Introduction to the operation and functions of operational amplifiers and linear devices. Design and circuit analysis of op-amps, comparators, converters and special purpose linear devices. Industry standard devices will be used.

Prerequisites: EET-227

**EET-254 Introduction to Microcontrollers**

3 credits, Spring

Introduction to processor architecture and microcontrollers. Internal structure, registers, busses, control unit. Clock, machine and instruction cycling timing, interrupts and DMA. Instruction set, mnemonics, functions, and assembly language programming. Interfacing to external memory and I/O on-chip peripherals.

Prerequisites: EET-157

Recommended Prerequisites: EET-257

**EET-257 Digital Logic II**

3 credits, Winter

Bus systems and computer peripherals & systems using latches, registers, counters, and memory circuits are developed and analyzed.

Prerequisites: EET-157

## Emergency Management Professional (EMP)

**EMP-201 Introduction to Homeland Security and Emergency Management**

4 credits, Not Offered Every Term

This course introduces Homeland Security and Emergency Management (HSEM) as a profession. The course begins with the historical context of HSEM and provides a foundation for the many disciplines within the field including threats and hazards analysis, hazard mitigation, emergency preparedness, response and recovery. The course also provides an overview of current issues, policies, best practices and lessons learned.

**EMP-202 Threat and Hazard Assessment for Emergency Management Professionals**

3 credits, Not Offered Every Term

This course demonstrates the importance of risk reduction programs and the history of Threats and Hazard Identification and Risk Assessment (THIRA). Emergency management professionals must assess weaknesses and establish programs to reduce risks during preparedness for the whole community. This course will give students a basic understanding of risk management and risk prevention in emergency management.

**EMP-204 Foundations of Emergency Planning**

4 credits, Not Offered Every Term

In order for a community to be truly prepared to respond to any type of natural and/or man-made disaster, it must develop effective emergency planning. This course will provide an introduction to the multiple aspects of disaster planning. It explores the patterns of human disaster behavior, social psychology and communication as well as the basics of generic planning actions, planning concepts, implementation, and action.

**EMP-206 Hazard Mitigation**

3 credits, Not Offered Every Term

This course will introduce the major principles involved in preparing for and mitigating the impact of hazards in the context of emergency and disaster management. Topics include key features and characteristics of various hazards, both natural and man-made, the risk assessment process that is used to determine community vulnerability, and in-depth discussion of hazard mitigation planning.

**EMP-208 Disaster Response and Recovery**

4 credits, Not Offered Every Term

The purpose of this course is to enable students to understand and think critically about response and recovery operations in the profession of emergency management. Students will utilize problem based learning by analyzing actual disaster events and applying the theories, principals, and practice of response and recovery. In addition, students will learn about the issues faced by vulnerable populations and how to address the unique needs during disaster response and recovery.

**EMP-210 Developing and Managing Volunteer Resources**

4 credits, Not Offered Every Term

This course will focus on methods and procedures for involving private-sector organizations and volunteers in emergency management programs in ways which benefit the whole community. The focus of the course is on maximizing the effectiveness of volunteer resources by implementing a people-oriented system that addresses defining volunteer roles, designing a plan of action, recruiting volunteers, training individuals who volunteer and motivation and maintenance of a successful program. Participants will acquire skills and knowledge to make appropriate volunteer assignments that enhance the effectiveness of an integrated emergency management system.

**EMP-212 Public Health and Medical Emergency Management**

3 credits, Not Offered Every Term

The course examines the issues and concepts that make up the field of public health and how public health agencies and organizations prepare for and support disaster response. It will examine the intersection of security and public health policy, threats to public health, legal and policy infrastructure and the tools that are available to improve preparedness, response and recovery efforts.

**EMP-214 Technology in Emergency Management**

4 credits, Not Offered Every Term

This class provides a detailed overview of technology and how it is applied in the field of emergency management. Students will learn how to utilize technology in emergency planning, response, recovery and mitigation efforts and they'll uncover the key elements that must be in place for technology to enhance the emergency management process. Course topics include Web Emergency Operations Center (WEOC), using technology with training and exercises, reverse 911 notification systems, video conferencing/downlinks and Geographic Information System (GIS) and remote sensing capabilities.

**EMP-216 Emergency Management Laws and Ethics**

2 credits, Not Offered Every Term

This course is designed to give the student an overview of various statutes, regulations, constitutional law, and common law associated with homeland security and emergency management. Students will examine local, state and federal laws and the authority of the Department of Homeland Security's Federal Emergency Management Agency (FEMA). Major topics covered include civil rights, international anti-terrorism efforts, the Homeland Security Act of 2002, and the Patriot Act. Students will be introduced to the legalities and ethics relevant to organizing for counterterrorism, investigating terrorism and other national security threats, crisis and consequence management.

**EMP-218 Public Information Officer and External Affairs**

2 credits, Not Offered Every Term

This course is designed to familiarize students with the concepts underlying the Public Information Officer (PIO) role. This course provides a basic understanding of the PIO function. Provide those in executive level roles the necessary knowledge of PIO roles and responsibilities during an emergency.

**EMP-220 Introduction to Emergency Management Public Administration and Policy**

2 credits, Not Offered Every Term

This course provides an overview of the structure and issues surrounding public service. Course participants will examine the context of public administration: the political system, the role of federalism, bureaucratic politics and power, and the various theories of administration that guide public managers. Lessons will be drawn from the most current applications of emergency management public administration, such as recent response efforts and Homeland Security.

Prerequisites: WR-121Z

**EMP-222 Terrorism Awareness and Response**

2 credits, Not Offered Every Term

Provides current and relevant information about terrorism, terrorist behavior, homeland security policies and dilemmas and how to deal effectively with threats and the consequences of attacks. Students will gain insight into the key players involved in emergency management, local and state issues and interacting and working with the Federal Emergency Management Agency (FEMA) and other federal agencies. Course components include identifying terrorism, causes of terrorism, preventing terrorist attacks, responding to terrorism attacks and avoiding communication and leadership collapse.

**EMP-224 Science of Disasters**

2 credits, Not Offered Every Term

This course will introduce students to scientific concepts and principles in several key areas related to natural and human-caused disasters. The course focuses on common and emerging threats that provide a basis for understanding the science of disaster.



**EMP-226 Business Continuity Fundamentals**

4 credits, Not Offered Every Term

This course provides a foundation for business continuity management and continuity of operations planning (COOP). Topics include business continuity initiation, risk evaluation and control, business impact analysis, developing business continuity strategies and plans, developing training and exercise programs, coordinating with external agencies, and exposure to current case studies.

## Emergency Medical Technology (EMT)

**EMT-101 Emergency Medical Technician Part I**

6 credits, Fall/Winter

This course is the first of a two part series that will prepare students to enter the workforce as an emergency medical service provider. Topics include airway management, patient assessment, and treatment/stabilization for common medical emergencies. Required: Student Petition.

Prerequisites: WRD-098 or placement in WR-121Z

Prerequisites: MTH-060 with a C or better or placement in MTH-065

Recommended Prerequisites: EMT-105 and MA-110

**EMT-102 Emergency Medical Technician Part II**

6 credits, Winter/Spring

This course is the second of the two part series that will prepare students to enter the workforce as an emergency medical service provider. Topics include patient assessment, treatment/stabilization for environmental and trauma emergencies, providing emergency care to special patient populations and EMS operations. Includes 20 hours of observational time in an emergency department and with an EMS unit. Upon successful completion, students will qualify to take the National Registry of Emergency Medical Technicians cognitive certification exam.

Required: Students must complete and document all OHA Health Profession Student Clinical Training Administrative Requirements

Prerequisites: EMT-101

**EMT-105 Introduction to Emergency Medical Services**

3 credits, Fall

Introduces the student to Emergency Medical Services (EMS). Examines the career path for paramedics. Explores structure and function of EMS systems. Includes roles and responsibilities, operations, medical-legal consideration, stress management, blood borne pathogens, and other Oregon specific content.

**EMT-109 Emergency Response Communication/Documentation**

2 credits, Spring

Covers principles of communication via verbal, written and electronic modes in the provision of EMS. Documentation of the elements of patient assessment, patient care and transport, communication systems, radio types, reports, codes and correct techniques.

Prerequisites: EMT-101

## Engineering (ENGR)

**ENGR-OSU Engineering Economy**

3 credits, Spring

ENGR-390 through Oregon State University (OSU)

**ENGR-111 Introduction to Engineering**

3 credits, Fall/Winter/Spring

Introduction to the basic ideas and tools of the engineering profession. An exploration of career and education options within the field, and the skills needed to achieve career goals. Methods of engineering analysis, design, and problem solving culminating in a design project. The class will cover all facets of engineering design, including background research, requirement specification and prioritization, development, prototype construction, testing, and evaluation for future redesigns.

Prerequisite Or Corequisite: MTH-111Z or higher

**ENGR-112 Engineering Programming**

3 credits, Fall/Winter/Spring

Introduction to basic scientific and engineering computing using MATLAB. Covers methods of engineering analysis, design, and problem solving with computational tools. Emphasis on developing proficiency in writing functions and programs.

Prerequisite or Corequisite: MTH-112Z or higher

**ENGR-115 Engineering Graphics**

3 credits, Spring

This course will emphasize the practical application of engineering graphics techniques for the design, maintenance, and modification of mechanical parts and assemblies. Students will both generate new models based on design intent and translate existing physical objects into graphical 3D models, documenting their work with 2D engineering drawings according to ASME standards. Includes isometric views, dimensioning, and simulation.

Prerequisites: MTH-060 or higher

**ENGR-171 Digital Logic**

4 credits, Winter

The first course in digital design covers basic logic gates, Boolean algebra, Karnaugh mapping, number systems, timing analysis, and state machines. Students will become proficient with computational tools including schematic capture programs and circuit simulators.

Prerequisites: MTH-111Z

**ENGR-201 Electrical Fundamentals**

4 credits, Spring

A study of basic electrical circuit theory. Analysis of voltage and current relationships. Covers circuit parameters of resistance, inductance, and capacitance. Includes basic DC, AC, and natural response of circuits. This course is not intended for Electrical or Computer Engineering majors.

Prerequisites: MTH-252

Corequisites: ENGR-201L

**ENGR-211 Statics**

4 credits, Fall

First term of engineering mechanics sequence. This course focuses on the study of force systems acting on articles or rigid bodies under equilibrium conditions.

Prerequisites: MTH-252

Prerequisite or Corequisite: PH-211

**ENGR-212 Dynamics**

4 credits, Winter

Kinematics, kinetics, work-energy, and impulse-momentum relationships of engineering systems. The course examines the fundamental principles of Newton's laws of motion, with applications to basic particles and rigid bodies in one, two, and three dimensions.

Prerequisites: ENGR-211 and PH-211



**ENGR-213** Strength of Materials

4 credits, Spring

Introduces the relation of externally applied loads and their internal effects on deformable bodies, such as columns, shafts, beams and statically indeterminate structures or systems made up of such members.

Prerequisites: ENGR-211

**ENGR-221** Electrical Circuit Analysis I

4 credits, Fall

Designed to give the student a thorough understanding of basic electrical circuit theory, this course covers voltage and current relationships and fundamental methods of circuit analysis. Electrical circuit parameters such as resistance, inductance, and capacitance will be examined through theory and laboratory experiments.

Prerequisites: MTH-252

Corequisites: ENGR-221L

**ENGR-221L** Electrical Circuit Analysis I Lab

0 credits, Fall

Lab Course for ENGR-221. Must be taken concurrently with ENGR-221.

Corequisites: ENGR-221

**ENGR-222** Electrical Circuit Analysis II

4 credits, Winter

Expands upon the techniques of circuit analysis begun in Circuits I through theory and laboratory experiments. The course covers the time response of first- and second-order circuits, the steady-state circuit behavior of circuits driven by sinusoidal sources, three phase circuits, AC power, electrical motors, and the use of Laplace transforms to analyze the transient and steady-state behavior for a number of signal types.

Prerequisites: ENGR-221

Corequisites: ENGR-222L

**ENGR-223** Electrical Circuit Analysis III

4 credits, Spring

Final course in the electrical circuits sequence. The main emphases of the course are frequency response of circuits, the design and analysis of filters, Laplace transform analysis, Fourier analysis, and two-port networks. The laboratory portion of the course will consist of one project involving significant design and analysis.

Prerequisites: ENGR-222

Corequisites: ENGR-223L

**ENGR-231** Properties of Materials

4 credits, Winter

This course is an introduction to materials science, a field that describes the behavior of materials by utilizing principles of chemistry and physics to engineer new materials and predict their resultant properties. The course will focus on describing the microscopic physical and chemical structure of materials and relating that structure to the macroscopic thermal, electrical, and mechanical properties. The course will also cover the connection between atomic/crystal structure and materials processing.

Prerequisites: CH-221

**ENGR-271** Digital Systems

4 credits, Spring

The second course in digital design covers synchronous state machine circuits, microprocessor architecture, shift register devices, and the design of memory systems.

Prerequisites: ENGR-171

## English Literature (ENG)

**ENG-104** Introduction to Literature: Fiction

4 credits, Summer/Fall

An introduction to American and international short stories, with a focus on the fundamental elements of fiction. Also examines the historical, social, and cultural background and significance of fiction. Students engage in literary analysis, use literary terminology, and develop personal and scholarly responses to fiction.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-105** Introduction to Literature: Drama

4 credits, Winter

An introduction to American and international drama, emphasizing reading, appreciation, discussion, and literary analysis. Focuses on defining the genre and elements of drama, encouraging students' personal reflections and cultural understanding, incorporating relevant literary theories, and practicing the close reading and analysis of dramatic works.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-106** Introduction to Literature: Poetry

4 credits, Spring/Summer

An introduction to multicultural poetry in English and translation. Explores the elements of poetry and examines the historical, social, and cultural significance of various poems. Students engage in literary analysis, use literary terminology, and develop both personal and analytical responses to poetry.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-107** World Literature: Ancient Through Classical Times

4 credits, Fall

Literature of the ancient through classical worlds: epic, lyric, and dramatic literature. Through class discussion, research, and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, relate the readings to their own lives and the world, and engage in academic conversations about the literature.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-108** World Literature: Early Middle Ages through the 18th Century

4 credits, Winter

Literature of the Early Middle Ages through the 18th Century, in a variety of genres. Through class discussion, research, and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, relate the readings to their own lives and the world, and engage in academic conversations about the literature.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-109** World Literature: The 19th through 21st Centuries

4 credits, Spring

Literature of the 19th through 21st centuries, in a variety of genres. Through class discussion, research, and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, relate the readings to their own lives and the world, and engage in academic conversations about the literature.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-116** Introduction to Literature: Comics

4 credits, Fall/Winter

Examines the intrinsic literary and artistic qualities of comics, as well as their connections to classic literature, and the literature and other art they have inspired.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-121** Mystery Fiction

4 credits, Fall

An introduction to detective/mystery fiction. Students will read, discuss, and analyze short stories by writers such as Edgar Allan Poe, Agatha Christie, and Walter Mosley.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-130** Leadership in Literature

4 credits, Not Offered Every Year

Examines the nature of leadership by analyzing characters in major literary works.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-194** Introduction to Film

4 credits, Not Offered Every Year

Viewing, discussion, and analysis of films from a variety of eras and cultures. Students will learn to analyze a film beyond its surface meaning, drawing on film aesthetics, technology, history, and theory. The interpretive and critical thinking skills they develop can be applied to a variety of modern media.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-195** American Film

4 credits, Winter

This course will focus on the history and theory of American filmmaking from 1895 to the present. Film will be viewed as a visual language and an evolving art form that expresses and influences American culture.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-201** Shakespeare

4 credits, Fall

Selected comedies, histories, tragedies, romances, and poetry. Students focus on reading and discussion, literary interpretation, and relating Shakespeare's work to their lives and the world. Works from ENG-201 will not be repeated in CCC's other Shakespeare course, ENG-202.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-202** Shakespeare

4 credits, Winter

Selected comedies, histories, tragedies, romances, and poetry. Students focus on reading and discussion, literary interpretation, and relating Shakespeare's work to their lives and the world. Study of significant plays and sonnets. Works from ENG-202 will not be repeated in CCC's other Shakespeare course, ENG-201.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-204** British Literature: Ancient to Enlightenment

4 credits, Fall

Representative study of British literature, including major works, writers, and literary forms, from its beginnings through the eighteenth century. Readings from the Anglo-Saxon, Middle English, Renaissance, Restoration, and Enlightenment periods.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-205** British Literature: Romantic to Contemporary

4 credits, Winter

Representative study of British literature, including major works, writers, and literary forms. Nineteenth century through modern, with readings from the Romantic, Victorian, and modern periods.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-213** U.S. Latinx Literature

4 credits, Not Offered Every Year

This course offers a survey of U.S. Latinx literature of various genres and historical periods. Students read and study the literary contributions by writers of varied cultural heritage and will bring theory and literature into conversation about issues in the world, including power, privilege, and cultural perspectives between Latinx populations and the U.S. cultural sphere.

Prerequisites: WRD-098 or placement in WR-121Z

**ENG-218** Arthurian Literature

4 credits, Not Offered Every Year

Explores the origins and development of Arthurian literature, focusing on the historical, cultural, social, and literary significance of original texts. Considers the Arthurian body of literature in the larger context of Western civilization and literary traditions, including its influence on contemporary literature, film, and art. Introduces theoretical approaches to literature and basic literary elements and terminology.

Prerequisites: WRD-098 or placement in WR-121Z

**ENG-222** Children's and Young Adult Literature

4 credits, Not Offered Every Term

Surveys the development of the genres of children's and young adult literature, including fairy tales, picture books, classic children's novels, and contemporary young adult novels, studying how these texts reflect their culture's understanding of young readers' psychology, taste, and learning needs over time.

Recommended Prerequisites: Placement in WRD-098 or above

**ENG-225** Creative Nonfiction Literature

4 credits, Not Offered Every Year

Discussion and analysis of various types of creative nonfiction such as literary journalism, memoirs, nature or science writing, literary travel writing, and personal essays.

Prerequisites: WRD-098 or placement in WR-121Z

**ENG-226** Popular Literature

4 credits, Fall/Spring

Focuses on genre work within prose, film, comics and/or videogames that is specific in theme and targeted towards a more mass audience than traditional literary work. Genres might include but not necessarily be limited to horror, fantasy, science fiction, romance, and/or westerns. May be repeated for up to 8 credits.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-230** Documentary Film

4 credits, Not Offered Every Term

This course will focus on documentary film history and theory. Students will learn to analyze documentary film and appreciate its value as a mode of cultural expression and influence.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-240** Native American Mythology

4 credits, Not Offered Every Year

Explores Native American mythology and its cultural, social, and literary significance; views Native American mythology in its historical and geographic positions and in the larger context of world literary tradition; considers how studying myth affects and influences reading other works; introduces theoretical approaches to mythology and basic literary elements and terminology.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-241 Norse Mythology**

4 credits, Not Offered Every Year

Explores Norse mythology and its cultural, social, and literary significance; views Norse mythology in its historical and geographic positions and in the larger context of Western literary traditions; introduces theoretical approaches to mythology and basic literary elements and terminology; considers how studying myth affects and influences reading other works; connects Norse myth to medieval European and modern fantasy literature.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-243 African Mythology**

4 credits, Not Offered Every Year

Explores African mythology and its cultural, social, and literary significance; views African mythology in its historical and geographic positions and in the larger context of global literary traditions; introduces theoretical approaches to mythology and basic literary elements and terminology; considers how studying myth affects and influences reading other works; connects African myth to African-American culture and literature.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-250 Greek Mythology**

4 credits, Not Offered Every Term

Explores the historical, cultural, social, and literary significance of Greek myths; views Greek mythology in its historical and geographic positions and in the larger context of Western civilization and literary tradition; considers how studying myth affects and influences reading other works; introduces theoretical approaches to mythology and basic literary elements and terminology.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-251 Celtic Mythology**

4 credits, Not Offered Every Year

Explores the historical, cultural, social, and literary significance of Celtic myths; views Celtic mythology in its historical and geographic positions and in the larger context of Western civilization and literary tradition; considers how studying myth affects and influences reading other works; introduces theoretical approaches to mythology and basic literary elements and terminology.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-252 Hindu Mythology**

4 credits, Not Offered Every Year

Explores the historical, cultural, social, and literary significance of Hindu myths; views Hindu mythology in its historical and geographic positions and in the larger context of world civilization and literary tradition; considers how studying myth affects and influences reading other works; introduces theoretical approaches to mythology and basic literary elements and terminology.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-253 American Literature: Pre-Columbian to Civil War**

4 credits, Winter

Representative readings from pre-European contact to 1865. Surveys the development of American poetry, fiction, drama, and prose through the study of the works of both major and lesser known writers.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-254 American Literature: 1865 to Present**

4 credits, Spring

Representative readings from the 1865 to present day. Surveys the development of American fiction, nonfiction, poetry, and drama through the study of the works of both major and lesser known writers.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-255 American Literature: Topics in American Literature**

4 credits, Not Offered Every Year

Focus on selected authors and works of American fiction, poetry, nonfiction, and drama. Theme changes yearly.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-260 Introduction to Women Writers**

4 credits, Not Offered Every Term

The study of the works (e.g. plays, poems, fiction, new media) created by women writers, both classic and contemporary, with an emphasis on women's evolving social, historical, and economic roles.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-261 Literature of Science Fiction**

4 credits, Spring

Explores historical, cultural, social, and literary significance of science fiction literature; places science fiction into the larger context of World literature and literary tradition. Considers how science fiction is often a lens to examine cultural themes such as gender, sexuality, race, and other ways that humans focus on difference; introduces theoretical approaches and basic literary elements and terminology.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-270 Introduction to Literary Criticism**

4 credits, Spring

Students will closely study famous literary texts through a variety of critical approaches such as structuralism, Feminist criticism, Psychoanalytic criticism, Marxist criticism, and queer theory.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-271 World Literature: Ancient Through Classical Times**

4 credits, Fall

Literature of the ancient through classical worlds: epic, lyric, and dramatic literature. Through class discussion, research, and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, relate the readings to their own lives and the world, and engage in academic conversations about the literature.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-272 World Literature: Early Middle Ages through the 18th Century**

4 credits, Winter

Literature of the Early Middle Ages through the 18th Century, in a variety of genres. Through class discussion, research, and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, relate the readings to their own lives and the world, and engage in academic conversations about the literature.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-273 World Literature: the 19th Through 21st Centuries**

4 credits, Spring

Literature of the 19th through 21st centuries, in a variety of genres.

Through class discussion, research, and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, relate the readings to their own lives and the world, and engage in academic conversations about the literature.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-280 English/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job experience in the field of English studies. Variable Credit: 2-6 credits.

Required: Student Petition.

Corequisites: CWE-281

**ENG-295** Revolutionary Film

4 credits, Not Offered Every Term

This course focuses on the study of revolutionary styles of filmmaking from around the world that were not only socially transformative, but changed the way movies are made.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-296** Adaptation: Literature Into Film

4 credits, Not Offered Every Term

Adaptation: Literature into Film is an exploration into the study of the art of transforming literary texts into films. The course focuses on various literary genres such as the novel, the short story, the play, and the nonfiction event, and analyzes the process of transforming these stories from page to screen, thereby creating a new art form. Note: This is a literature and not a writing class.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ENG-297** A.S. Degree Portfolio

1 credits, Fall/Winter/Spring/Summer

This course provides the opportunity for A.S. Degree students to revise, edit, reflect upon, and compile their best work from their various focus areas to meet the outcomes for the program and prepare for transfer to a university.

Required: Students must be in the second year of their course of study, and have the majority of their focus area and transfer requirements complete

## Environmental Safety & Health (ESH)

**ESH-100** Environmental Regulations

1-3 credits, Fall/Winter/Spring

An overview of environmental regulations as they pertain to industry, agriculture, schools and the general public. Major points of environmental law, federal and state regulatory statutes and regulations, and the agencies responsible for their enforcement. This course has been developed with the cooperation of DEQ. Variable Credit: 1-3 credits.

## Environmental Science (ESR)

**ESR-171** Introduction to Environmental Science

4 credits, Fall

Introduction to environmental science topics. Will focus on human impacts on land, air, water and ecology, climate change, sustainability, environmental impacts on human health and environmental justice. The laboratory assignments will focus on applied introductory environmental science topics.

Recommended Prerequisites: MTH-060 or MTH-098 with a C or better, or placement in MTH-065.

WRD-098 or placement in WR-121Z

Corequisites: ESR-171L

**ESR-172** Introduction to Climate Change

4 credits, Winter

Introduction to climate change, the causes and consequence and efforts to mitigate climate change. The laboratory assignments will focus on applied introductory climate change topics.

Recommended Prerequisites: MTH-060 with a C or better or placement in MTH-065.

WRD-098 or placement in WR-121Z

Corequisites: ESR-172L

**ESR-173** Introduction to Sustainability

4 credits, Spring

Introduction to environmental, ecological and human sustainability. Focus on human impacts on environmental degradation and methods to approach sustainability and environmental justice. The laboratory assignments will focus on applied introductory sustainability topics.

Recommended Prerequisites: MTH-060 or MTH-098 with a C or better, or placement in MTH-065.

WRD-098

Corequisites: ESR-173L

## Ethnic Studies (ES)

**ES-101** Introduction to Ethnic Studies

4 credits, Fall

This course uses an interdisciplinary approach to introduce the multifaceted experience of historically marginalized ethnic and racial groups in the US with an emphasis on Chicano/Latinx, African American, Native American/US First Nations, and Asian Americans. Students will explore theory of the development of race and ethnicity in the US, systemic oppression, comparative historical perspectives, and political resistance and movements, including modern abolitionism and decolonization.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**ES-211** Introduction to Latino/a/x Studies

4 credits, Not Offered Every Term

An introductory and survey course analyzing the historical context of Latinos in the United States (US). Beginning with pre-colonial societies on the American Continent, colonization, and moving to the modern Latinx diaspora. Special attention will be given to particular events that shaped and continue to influence the Latinx experience, such as the Mexican-American War, US expansionism, US immigration policy, the Chicano Movement, US foreign policy in Latin America, and the contemporary discourse regarding Latinx in the US.

Recommended Prerequisites: WR-121Z

**ES-221** Introduction to Black Studies

4 credits, Not Offered Every Term

This is an introductory and survey course which analyzes factors that helped mold the African American experience, beginning with pre-colonial Africa to US contemporary socio-political, cultural, educational, and economic issues relevant to descendants of the African diaspora. Provides counter narratives to dominant perspectives on race, ethnicity, and Black identity.

Recommended Prerequisites: WR-121Z

**ES-241** Introduction to Native American Studies

4 credits, Not Offered Every Term

An introductory, interdisciplinary analysis of issues impacting Indigenous lives and identities of North America, deconstructing myths and addressing historical and contemporary key issues in the field of Native American Studies from the counter-narrative perspective.

Recommended Prerequisites: WR-121Z



## Fire Science (Wildland) (FRP)

### FRP-101 Basic Forest Management

3 credits, Fall

An introduction to forestry and forest land management activities and practices related to forest stewardship. Students will gain an understanding of how social, economic and environmental values influence current forest policies and regulations.

Corequisites: FRP-102

### FRP-102 Basic Forest Management Lab

1 credits, Fall

Provides lab exercises in a forest setting experience using forest management field equipment discussed in FRP-101. The Lab includes the use of diameter tape, loggers tape, compass, clinometer, increment borer and wedge prism to measure tree height, diameter, tree age, diameter increment and basal area. Through the use of fixed plot and variable plot forest sampling methods the students will gain the skills to gather data necessary to calculate stocking, volume and growth.

Corequisites: FRP-101

### FRP-110 Basic Wildland Fire Investigation (FI-110)

1 credits, Not Offered Every Term

An introduction to the roles and responsibilities of wildland firefighters in determining a wildland fire origin. Students will identify the wildland fire categories, wildland fire behavior and the initial observations made by the firefighter responding to and arriving at a wildland fire. The primary emphasis of this course is to teach sound wildland fire observations and origin scene protection practices that enable first responders to a wildland fire scene to perform proper origin scene protection procedures.

Prerequisites: FRP-130 (S-130/S-190/L-180)

### FRP-130 Introduction to Wildland Firefighting (S-130/S-190/ICS-100/IS-700/L-180)

2 credits, Fall/Spring

This course provides an introduction to wildland fire behavior, wildland firefighting safety and wildland firefighting techniques. The course covers the basic skills necessary to fight wildland fires under close supervision. NWCG Courses completed in class include S-130, S-190, L-180, IS-100 and IS-700. Also includes the Work Capacity Test (WCT) which is needed for employment.

### FRP-131 Advanced Firefighter Training (S-131/S-133)

1 credits, Not Offered Every Term

This course provides instruction that meets the training requirements for the Wildland Firefighter Type 1 position and/or Incident Commander Type 5 (ICT5).

Prerequisites: FRP-130 (S-130/S-190/L-180)

### FRP-200 Basic Incident Command System (I-100, I-200, IS-700, IS-800)

4 credits, Not Offered Every Term

Introduces the knowledge and skills to function efficiently during an incident or event within the Incident Command System (ICS). National Incident Management System (NIMS) and the National Response Framework (NRF) provide a consistent nationwide template to enable all government, private-sector, and nongovernmental organizations to work together during domestic incidents.

### FRP-201 Advanced Forest Management

3 credits, Not Offered Every Term

Discuss and explore forest management concepts and principles through classroom lecture and field trips. Contrast forest management decisions made dependent on public or private landowner objections, economics and federal and state laws that provide for protection of soil, water, air, fish, and wildlife and consideration of recreation values.

Prerequisites: FRP-101 and FRP-102

### FRP-203 Introduction to Incident Information

3 credits, Not Offered Every Year

The purpose of this course is to provide students with the skills and knowledge needed to serve as a Public Information Officer (PIOF). The course covers establishing and maintaining an incident information operation, communicating with internal and external audiences, working with the news media, handling special situations, and long-term planning and strategy.

### FRP-205 Forest Management Assessments and Inventories

3 credits, Not Offered Every Term

Provides forest technicians, wildland firefighters and other natural resource employees the ability to conduct various forest management and recreation management assessments and inventories. The students will gain the ability to gather data for making forest management and fire management decisions.

Prerequisites: FRP-101 and FRP-102

Recommended Prerequisites: FRP-201

### FRP-211 Portable Pumps and Water Use (S-211)

2 credits, Not Offered Every Term

This course is designed to provide knowledge and skills to design, setup, operate, troubleshoot, and shut down portable water delivery systems. The focus is on portable pumps; it does not address water delivery for engines. There is also a field exercise where students will apply what they learned in the classroom.

Recommended Prerequisites: FRP-130 (S-130/S-190/L-180)

### FRP-212 Wildfire Power Saws (S-212)

2 credits, Not Offered Every Term

The course lessons provide introduction to the function, maintenance, and use of internal combustion engine-powered chainsaws, and their tactical wildland fire application. Field exercises support entry-level training for firefighters with little or no previous experience in operating a chainsaw, providing hands-on cutting experience in surroundings similar to fireline situations. Required: Student Petition.

Required: Students must be at least 18 years of age.

Must have current first aid, CPR and AED certification

Prerequisites: FRP-130 (S-130/S-190/L-180), FRP-250

### FRP-215 Fire Operations in the Urban Interface (S-215)

2 credits, Not Offered Every Term

Assess homes and structures located in and around forest, grass and brush lands (urban interface) for vulnerability to a wildland fire.

Prerequisites: FRP-130 (S-130/S-190/L-180)

### FRP-220 Initial Attack Incident Commander (S-200)

1 credits, Not Offered Every Term

The course provides the students with the basic skills to lead the initial attack resources on small non-complex wildland fires. Provides the students with the knowledge to prepare for the assignment, assess the fire, determine resources needs and complete the necessary administrative functions required of an Initial Attack Incident Commander Type 4.

Prerequisites: FRP-130 (S-130/S-190/L-180)

**FRP-230 Crew Boss (Single Resource) (S-230)**

2 credits, Not Offered Every Term

The course provides the student with the basic knowledge required of a crew leader (Crew Boss) of a wildland firefighting crew for a Federal, State or Contract Agency fire organization.

Prerequisites: FRP-130 (S-130/S-190/L-180), FRP-131 (S-131/S-133)

Recommended Prerequisites: FRP-290 (S-290) in the last 3 years

**FRP-231 Engine Boss (Single Resource) (S-231)**

1 credits, Not Offered Every Term

The course provides the student with the required initial training to perform as a wildland fire engine supervisor (Engine Boss) for a Federal, State or Contact Fire organization.

Prerequisites: FRP-130 (S-130/S-190/L-180), FRP-131 (S-131/S-133)

Recommended Prerequisites: FRP-290 (S-290) in the last 3 years

Corequisites: FRP-230 (S-230)

**FRP-236 Heavy Equipment Boss (S-236)**

2 credits, Spring

This course provides the student the knowledge and skills needed to maintain an effective heavy equipment operation with considerations for tactical use and safety precautions. The course includes a field exercise to reinforce what is discussed in the classroom.

**FRP-243 Wilderness I: Psychology of Survival**

3 credits, Not Offered Every Term

Students will learn how to be mentally and physically prepared to survive in the wilderness, the psychology of surviving, and what to do when things go wrong. The course explores the science of survival. Other topics include disaster preparedness, ropes and knots, heat related injuries and increasing situation awareness.

**FRP-244 Wilderness II: Basic Land Navigation (S-244)**

3 credits, Not Offered Every Term

Students will learn how to make and document field observations, how to produce hand drawn and GPS field maps, and how to navigate using a map, compass, and GPS.

**FRP-245 Wilderness III: Weather of the Northwest**

2 credits, Not Offered Every Term

This course covers the basics of weather forecasting, especially as it relates to the weather of the Northwest.

**FRP-246 Wilderness IV: Backcountry CPR/First Aid/AED**

2 credits, Not Offered Every Term

Introduction to general medical concepts and basic life support skills. It is targeted to the outdoor enthusiast on day trips or short adventures. Course results in CPR, first aid & AED certification.

**FRP-247 Survivor VII: Food, Water, Shelter & Fire**

1 credits, Not Offered Every Term

Learn and practice wilderness survival skills for the Pacific Northwest. Students construct shelters and fires, identify edible plants, track animals, sterilize drinking water, and more. Multiple methods are covered including primitive and modern practices. Students build personal fire making and water filtration kits.

**FRP-248 Wilderness V: Introduction to Search and Rescue**

2 credits, Not Offered Every Term

This course introduces students to the philosophy, tactics, and operations of search and rescue techniques and strategies. It will also address how people behave and respond when they become lost.

**FRP-249 Followership to Leadership (L-280)**

2 credits, Spring

The course prepares the student for a basic field operations leadership role. Students will be able demonstrate basic leadership skills through interactive classroom discussions and scenario based exercises.

**FRP-250 Wilderness VI: Basic Tool Use and Care**

1 credits, Spring

Selection, operation, and maintenance of chain saws and hand tools to include shovels, Pulaski, single and double bit axes, hand saws, and various other tools used in forestry, firefighting and survival activities. Class includes a lab component.

**FRP-255 Physical Fitness and Nutrition for First Responders**

2 credits, Fall/Winter/Spring

This course will assist the student in meeting the physical fitness requirements for work in firefighting, and emergency medical services. Includes individual conditioning strategies, nutritional guidelines, basic exercise principles, pre-employment and lifelong fitness and conditioning. The course will prepare students for activities like the Candidate Physical Abilities Test (CPAT), work capacity test and other physical ability tests required for first responders.

Required: Complete a physical performed by a doctor prior to attending  
Recommended: Have adequate outdoor exercise attire and be prepared for arduous physical activity

**FRP-265 Wildland Fire Prevention Education 1 (P-101)**

3 credits, Winter

This course was developed as part of a multi-course national curriculum covering wildfire prevention. It is designed to provide a basic introduction of fire prevention principles and activities for fire prevention specialists, fire managers, public information officers and others who have wildland fire prevention, education, or mitigation responsibilities. Course equivalent to NWCG P-101 Fire Prevention Education 1.

Prerequisites: FRP-130 (S-130/S-190/L-180)

**FRP-270 Basic Air Operations (S-270)**

1 credits, Not Offered Every Term

The course introduces students to basic air operations including the different types of aircraft used in wildland firefighting operations along with mission planning, risk management, safety, and communications.

**FRP-275 Wildland Fire Management 1**

4 credits, Fall

This course is designed to meet the needs of current and future unit level Fire Program Managers. Students will learn how to identify the basic principle, policies, and procedures to effectively and safely lead, plan, and implement a fire management program. The responsibilities of the Fire Program manager include program management and personal accountability are also covered in this course.

Prerequisites: FRP-130 (S-130/S-190/L-180), FRP-131 (S-131/S-133), FRP-249 (L-280), and WR-101 or WR-121Z

**FRP-280 Wildland Fire CWE**

3 credits, Not Offered Every Term

Cooperative Work Experience. Provides students with on-the-job experience in the field of wildland firefighting. May be repeated for up to 6 credits. Required: Student Petition.

Corequisites: CWE-281



**FRP-281 Wildland Fire Management Capstone**

3 credits, Not Offered Every Term

The Wildland Fire Management Capstone course assesses the knowledge and skills gained by students completing the Wildland Fire Management AAS and/or Wildland Fire Science Certificate. Working with the instructor, students begin the course by researching and proposing a project related to the program learning outcomes. After developing a project plan and working through the analysis necessary, students will present their findings in an oral and written presentation. Additionally, scenario-based assignments will reinforce the project-based analysis process. Throughout the course, portfolio building strategies are explored with an emphasis on developing a professional portfolio demonstrating their work as preparation for entering or advancing in the wildland firefighting profession. Required: Student Petition.

**FRP-282 Prescribed Fire Implementation (RX-301)**

2 credits, Not Offered Every Year

This course is designed to introduce students to the tools and techniques used to perform in the role of a Prescribed Fire Burn Boss. The course material is based on the tasks found in the position task book for Prescribed Fire Burn Boss. It leads the student through the duties and responsibilities associated with the position of the Prescribed Fire Burn Boss including evaluation and implementation of a prescribed fire plan. Required: Student Petition.

**FRP-284 Introduction to Fire Effects (RX-310)**

3 credits, Not Offered Every Year

This course is designed to provide students with the knowledge and skills necessary to recognize and communicate the relationships between basic fire regimes and fire effects, the effects of fire treatments on fire effects, and to manipulate fire treatments to achieve desired fire effects. Required: Student Petition.

**FRP-285 Wildland Fire Facilitative Instructor (M-410)**

4 credits, Not Offered Every Term

This course helps students become effective facilitative instructors. This course improves training delivery and quality by presenting instructional methods with an emphasis on student-oriented adult training techniques. This course is designed for students to meet National Wildfire Coordinating Group (NWCG) instructor requirements. Prerequisites: FRP-130, and WR-101 or WR-121Z

**FRP-286 Prescribed Fire Plan Preparation (RX-341)**

3 credits, Not Offered Every Year

The purpose of this class is to provide students with the skills/knowledge to prepare a prescribed fire plan for technical review and approval in accordance with the Interagency Prescribed Fire Planning and Implementation Procedures Guide, National Wildfire Coordinating Group (NWCG) Publication 484. Required: Student Petition.

**FRP-288 Smoke Management Techniques (RX-410)**

3 credits, Not Offered Every Year

This course leads students through the ecological and historical role of fire, characteristics of smoke and the health, safety and visibility impacts of smoke. Other topics include public relations, legal requirements, meteorology, fuel consumption, smoke production dispersion modeling, and operational smoke management strategies. This course is designed to be interactive in nature. It contains a panel discussion, several exercises designed to facilitate group and class participation and case studies from a variety of fuel types and political challenges. Required: Student Petition.

**FRP-290 Intermediate Wildland Fire Behavior (S-290)**

3 credits, Not Offered Every Term

This course provides the student with the basic skills to determine the characteristics of fuels(vegetation) when involved in a wildland fire, the effects weather has on a wildland fire, the various topographic features that impact wildland fire and the fire behavior patterns of a wildland fire. Prerequisites: FRP-130 (S-130/S-190/L-180)

**FRP-291 Fire Academy I**

3 credits, Not Offered Every Year

This course provides an introduction to fire incident related experience that fulfills the requirements of OR-OSHA and the Department of Public Safety Standards and Training for Entry-Level Firefighter.

**FRP-292 Fire Academy II**

3 credits, Not Offered Every Year

This course develops fire incident related experience that fulfills the requirements of OR-OSHA and the Department of Public Safety Standards and Training for Entry-Level Firefighter. Covers tools, procedures, techniques and safety precautions utilized by firefighters during fire ground operations. Includes comprehensive training in firefighting skills related to fire company evolutions. Involves transfer of knowledge obtained from classroom instruction to drill ground application during hands-on live fire training.

Prerequisites: FRP-291

**FRP-294 Intermediate Incident Command System (I-300)**

2 credits, Not Offered Every Term

This course focuses on ICS for supervisors in expanding incidents. ICS 300 outlines how the NIMS Command and Coordination component supports the management of expanding incidents as well as describes the incident management processes as prescribed by ICS. This course has a threaded activity that will give students the opportunity to practice implementing the incident management process and create an Incident Action Plan (IAP) for a simulated expanding incident.

Prerequisites: FRP-200 (I-100, I-200, IS-700, IS-800)

**FRP-295 Advanced Incident Command System (I-400)**

2 credits, Not Offered Every Term

This course provides the student with the advanced level instruction and application of the functional positions and organizations found within the Incident Command System(ICS). Through exercises, the students will apply the functional titles and positions within ICS in order to identify and address incident or events needs and define the inter-agency coordination required to effectively manage large scale incidents or events.

Prerequisites: FRP-294 (I-300)

**FRP-296 Introduction to Wildland Fire Behavior Calculations (S-390)**

4 credits, Not Offered Every Term

This course introduces the students to the fire behavior calculations used to estimate wildland fire behavior and fire spread. Students will apply the calculations using graphs and scales based on modeling to determine the characteristics of fuels, the weather and topography that influences fire behavior and document these calculations using the manual methods.

Prerequisites: FRP-290 (S-290)

## Fire Science Technology (FST)

**FST-202** Principles of Emergency Services  
3 credits, Fall

This course provides an overview of fire protection and emergency services to include: career opportunities in fire protection and related fields, culture and history of emergency services, fire loss analysis, organization and function of public and private fire protection services, fire departments as a part of local government, laws and regulations affecting the fire service, fire service nomenclature, specific fire protection functions, basic fire chemistry and physics, introduction to fire protection systems, introduction to fire strategy and tactics and life safety initiatives. FESHE course code: C0273

**FST-204** Fire Protection Systems  
3 credits, Not Offered Every Term

This course provides information relating to the features of design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppression systems, water supply for fire protection and portable fire extinguishers. FESHE course code: C0288

**FST-205** Fire Instructor I  
3 credits, Not Offered Every Year

The Instructor I course is designed to give the student the knowledge and ability to teach from prepared materials in multi-discipline activities found within public safety (fire, law enforcement, wildland, emergency medical services, etc.). Prepares the program participants for planning instruction, using a variety of instructional methods, teaching diverse learners, and evaluating course outcomes. This course meets the competency standards established by the National Fire Protection Association (NFPA) 1041 Standard for Fire Service Instructor Professional Qualifications, Instructor I.

**FST-206** Fire Behavior and Combustion  
3 credits, Not Offered Every Term

This course explores the theories and fundamentals of how and why fires start, spread, and are controlled. FESHE course code: C0276

**FST-207** Fire Instructor II  
4 credits, Not Offered Every Year

The Instructor II course is designed to give the student the knowledge and ability to develop and adapt curriculum used to instruct public safety (fire, law enforcement, wildland, emergency medical services, etc.) personnel. Uses an intensive instructional methodology program to prepare the participant for planning and developing all aspects of course curriculum. This course meets the competency standards established by the National Fire Protection Association (NFPA) 1041 Standard for Fire Service Instructor Professional Qualifications, Instructor II.  
Prerequisites: FST-205

**FST-212** Fire Prevention  
3 credits, Not Offered Every Term

This course provides fundamental knowledge relating to the field of fire prevention. Topics include: history and philosophy of fire prevention, organization and operation of fire prevention bureau, use and application of codes and standards, plans review, fire inspections, fire and life safety education and fire investigation. FESHE course code: C0286

**FST-214** Building Construction for Fire Protection  
3 credits, Not Offered Every Term

This course provides the components of building construction related to firefighter and life safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations and operating at emergencies. FESHE course code: C0275

**FST-216** Principles of Fire and Emergency Services Safety and Survival  
3 credits, Not Offered Every Term

This course introduces the basic principles and history related to the national firefighter life safety initiatives focusing on the need for cultural and behavior change throughout the emergency services. FESHE course code: C0281

**FST-240** Fire Officer I  
4 credits, Not Offered Every Year

This course is part I of the Fire Officer series and is designed for the first-line company officer/supervisor and satisfies the requirements of the National Fire Protection Association (NFPA) 1021 Standard for Fire Officer Professional Qualifications, Chapter four Fire Officer I. It is designed around classroom lectures and group exercises to improve the student's abilities to manage a single fire company. This includes responsibilities such as the development of an Incident Action Plan (IAP), personnel management and mentoring, and community relations.  
Prerequisites: FRP-291, FRP-292

**FST-245** Fire Officer II  
4 credits, Not Offered Every Year

This course is part II of the Fire Officer series and is designed as a continuation for the first-line company officer/supervisor and satisfies the requirements of the National Fire Protection Association (NFPA) 1021 Standard for Fire Officer Professional Qualifications, Chapter four Fire Officer I. It is designed around classroom lectures and group exercises to improve the student's abilities to manage a single fire company. This includes responsibilities such as the development of an Incident Action Plan (IAP), personnel management and mentoring, and community relations.  
Prerequisites: FST-240

## First Year Experience (FYE)

**FYE-101** First Year Experience Level I  
2 credits, Fall/Winter/Spring

This is the first course in a 3-course sequence designed to help students adjust to a new campus, connect with other students, understand college expectations and systems, and access services available through the college. The First Year Experience Level I course is designed to help students in developing relationships with students and faculty, and to build student behaviors for successfully completing classes and continuing college through to completion.

**FYE-101ES** Experiencia de Primer Año (first Year Experience en español)  
2 credits, Fall/Winter/Spring

Este es el primer curso en la serie de 3 clases diseñadas para ayudar a los estudiantes novatos o que inician apenas su trayectoria estudiantil, con el ajuste a un plantel nuevo, a conectar con otros alumnos, a entender las expectativas del sistema estudiantil, y a familiarizarse con la fuente de servicios al alcance del estudiante. First Year Experience (Experiencia de Primer Año) está diseñada para preparar a los estudiantes a entablar nexos entre estudiante y profesorado, y con el desarrollo de prácticas exitosas para concluir clases y continuar con el estudio hasta la culminación de metas académicas.

**FYE-102** First Year Experience Level II

1 credits, Fall/Winter/Spring

This course is a second in the First Year Experience sequence offered to new CCC students. This course is designed for students who want to continue to delve in depth into future educational and career planning, financial aid and scholarships, applied study skills, and college and community resources.

Prerequisites: FYE-101

**FYE-103** First Year Experience Level III

1 credits, Fall/Winter/Spring

This is the third course in the First Year Experience sequence.

This course is designed to help students prepare for their future, including transferring to another school or university, how to search for employment, becoming proficient in the use of test taking skills, and how to break large projects and assignments into more manageable pieces for successful completion.

Prerequisites: FYE-102

## Food & Nutrition (FN)

**FN-110** Personal Nutrition

3 credits, Summer/Winter/Spring

This course explores how nutrition affects health and fitness for the individual and the family. Students apply knowledge of nutrition guidelines to analyze personal diet and improve current food preparation and habits. It is a basic nutrition course for students with little or no science background.

**FN-225** Nutrition

4 credits, Fall/Winter/Spring/Summer

This course explores the role of nutrients in the development and maintenance of a healthy body. The course examines the relationship between diet and health. Students apply knowledge of nutritional adequacy through computer-aided diet analysis. It discusses current nutrition recommendations and controversies. The course meets requirements for most nursing programs.

Recommended: A strong background in anatomy and physiology, biology or chemistry

## French (FR)

**FR-101** First-Year French I

4 credits, Fall

First term of a three-term foundational, multimedia course in beginning French designed to give students basic communicative proficiency in the target language. Students will practice all four skills: listening, speaking, reading, and writing. Special attention will be paid to pronunciation, essential grammar structures, and attendant cultural elements.

Student learning is assessed through a variety of guided exercises and assignments, interactive activities, homework, tests and quizzes, and other class projects and participation.

**FR-102** First-Year French II

4 credits, Winter

Second term of a three-term foundational, multimedia course in beginning French designed to give students basic communicative proficiency in the target language. Students will practice all four skills: listening, speaking, reading, and writing. Special attention will be paid to pronunciation, essential grammar structures, and attendant cultural elements. Student learning is assessed through a variety of guided exercises and assignments, interactive activities, homework, tests and quizzes, and other class projects and participation.

Prerequisites: FR-101

**FR-103** First-Year French III

4 credits, Spring

Third term of a three-term foundational, multimedia course in beginning French designed to give students basic communicative proficiency in the target language. Students will practice all four skills: listening, speaking, reading, and writing. Special attention will be paid to pronunciation, essential grammar structures, and attendant cultural elements. Student learning is assessed through a variety of guided exercises and assignments, interactive activities, homework, tests and quizzes, and other class projects and participation.

Prerequisites: FR-102

**FR-201** Second-Year French I

4 credits, Fall

The second year of academic French expands on first-year French in the review of essential grammar structures, the use of more advanced grammar, and cross-cultural discussion and analysis. Emphasis is on communication skills, stressing both oral proficiency and written expression.

Prerequisites: FR-103

**FR-202** Second-Year French II

4 credits, Winter

The second year of academic French expands on first-year French in the review of essential grammar structures, the use of more advanced grammar, and cross-cultural discussion and analysis. Emphasis is on communication skills, stressing both oral proficiency and written expression.

Prerequisites: FR-201

**FR-203** Second-Year French III

4 credits, Spring

The second year of academic French expands on first-year French in the review of essential grammar structures, the use of more advanced grammar, and cross-cultural discussion and analysis. Emphasis is on communication skills, stressing both oral proficiency and written expression.

Prerequisites: FR-202

**FR-211** Intermediate French Conversation

3 credits, Fall

First term of a three-term series in intermediate development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary French-language media, presentations, games, role-plays, debates, pair and group work. This course is ideally suited as a language elective or for personal enrichment. Materials, topics and level of difficulty will parallel work in FR-201.

Prerequisites: FR-103 with a C or better

**FR-212 Intermediate French Conversation**

3 credits, Winter

Second term of a three-term series in intermediate development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary French-language media, presentations, games, role-plays, debates, pair and group work. This course is ideally suited as a language elective or for personal enrichment. Materials, topics and level of difficulty will parallel work in FR-202.

Prerequisites: FR-103 with a C or better, or Student Petition

**FR-213 Intermediate French Conversation**

3 credits, Spring

Third term of a three-term series in intermediate development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary French-language media, presentations, games, role-plays, debates, pair and group work. This course is ideally suited as a language elective or for personal enrichment. Materials, topics and level of difficulty will parallel work in FR-203.

Prerequisites: FR-103 with a C or better, or Student Petition

## General Education Development (GED)

**GED-011 GED in Español**

0 credits, Fall/Winter/Spring/Summer

Instrucción del desarrollo de habilidades básicas ofrecida en español. Un examen de diagnóstico determina las necesidades académicas del alumno. Inscripción y terminación del curso todo el tiempo durante el trimestre, se ofrece en Harmony center y Oregon City campus. Se requiere el consentimiento del Instructor para registrarse. Basic academic instruction offered in Spanish. Diagnostic tests determine individual academic needs. Open-entry, open-exit class offered at Harmony center and Oregon City campus. Required: Student Petition.

**GED-012 GED Preparation**

0 credits, Fall/Winter/Spring/Summer

Basic academic skill development targeting skills needed to pass the 2014 GED test. Diagnostic tests determine individual academic needs. Open-entry, open-exit classes offered at Clackamas County Corrections Facility. Required: Student Petition.

**GED-015 GED Preparation**

0 credits, Fall/Winter/Spring/Summer

Basic academic skill development preparing for the GED 2014 tests and transition to career or post-secondary education. Course focuses primarily on language arts, math and technology skills. Provides direction and support for transitioning students. Required: Student Petition.

**GED-049 Latino GED & Life Skills**

0 credits, Fall/Winter/Spring/Summer

Desarrollo de habilidades académicas básicas, ofrecida en español con énfasis en los requerimientos para presentar el test del GED para obtener el certificado equivalente a la High School. También se enfoca en habilidades básicas de la vida, metas personales e interés de carreras. Se requiere el consentimiento del Instructor para registrarse. Offered in Spanish. Basic academic skill development with emphasis on requirements to take the GED test to obtain a high school equivalency certificate. Also focuses on basic life skills, personal and career goals and interests. Required: Student Petition.

## General Science (GS)

**GS-104 Earth System Science**

4 credits, Fall

A lab course designed to give an overview of the physical sciences by examining the relationship between physics, chemistry and geology in the natural world. Topics include plate tectonics, the Earth's structure, earthquakes/hazards, mineral chemistry, igneous rocks, and volcanoes/hazards.

Recommended Prerequisites: MTH-065 or placement in MTH-095

Corequisites: GS-104L

**GS-105 Earth System Science**

4 credits, Winter

A lab course examining the chemistry and geology of scientific dating techniques, sedimentary rocks, surface processes, fossils, energy resources and the physics and chemistry of energy resources and mass wasting.

Recommended Prerequisites: MTH-065 or placement in MTH-095

Corequisites: GS-105L

**GS-106 Earth System Science**

4 credits, Spring

A lab course examining the relationship between chemistry/physics/geology with regards to the hydrosphere and atmosphere. Topics include atmospheric processes, rivers and ground water, beach/ocean processes and climate change.

Recommended Prerequisites: MTH-065 or placement in MTH-095

Corequisites: GS-106L

**GS-107 Astronomy**

4 credits, Fall/Winter/Spring

A lab course including the history of astronomy, the Earth and moon, all planets in our solar system, along with asteroids, meteors and comets. Prerequisites: MTH-065 or MTH-098 with a C or better or placement in MTH-095

Prerequisites: WRD-090 or placement in WRD-098

Corequisites: GS-107L

## Geographic Information Systems (GIS)

**GIS-101 Principles of Geospatial Technology**

2 credits, Fall

This course serves as an overview of the concepts and principles of geospatial technology using lab activities to explore maps, geospatial data, and geospatial software. Major themes include: maps and cartography, geodesy, geographic information systems, spatial data privacy, global navigation satellite systems, remote sensing/image interpretation, terrain analysis, web maps, and the geospatial industry.

**GIS-201 Introduction to Geographic Information Systems**

3 credits, Summer/Fall

This course explores fundamental geographic information systems (GIS) concepts utilizing hands-on application through various laboratory exercises with industry-standard ArcGIS software. The class explores basic map principles, cartographic design, geodesy, and geospatial data manipulation while exploring ArcGIS Online to create, display, query, relate, classify, and analyze spatial data to create maps and answer geographic questions.



**GIS-202** Intermediate Geographic Information Systems

3 credits, Winter

This class follows the introductory course as a continuation of Geographic Information Systems (GIS) principles using the ArcGIS Pro software platform. Topics explored include working with geodatabases, topology, vector and raster analysis, and creating and editing data. Students also practice key GIS project management processes, workflows, and best practices through an analysis project.

Prerequisites: GIS-201

**GIS-205** Cartography and Map Making

3 credits, Winter

Explores basic cartographic design principles and how to apply them to produce high quality maps using ArcGIS Pro software. Introduces cartographic terminology, principles, and map-making tools. Significant themes include visual representation and communication; how to turn geographic data into effective maps for print and the web; how to critique maps; map design and elements; and color, fonts, labels, and symbols for maps.

Prerequisites: GIS-201

**GIS-232** Data Collection & Application

2 credits, Spring

This course introduces data collection techniques and application of those techniques. This course explores different techniques to collect spatial and attribute data. The class focuses on GPS (Global Positioning System) data collection using a combination of recreational/mapping-grade GPS units and standard mobile devices (with embedded GPS) used in industry. The class will emphasize the capabilities and strengths of each type of data collection equipment.

Prerequisites: GIS-101

**GIS-236** Introduction to Programming for GIS

3 credits, Winter

An introduction to computer programming and Object Orientated Programming (OOP) with Python. Covers basic computer programming concepts including data types, loops, control structures, functions, classes, and program development. Use Python for problem solving by creating basic scripts for more advanced object-oriented programs.

Recommended Prerequisites: GIS-101

**GIS-237** Advanced Programming for GIS

3 credits, Not Offered Every Term

This course introduces Python programming in connection with Geographic Information Systems (GIS). It focuses on automating processes, procedures, programming with GIS data types, and building custom functions using ESRI's ArcGIS software platform. It also provides the opportunity to build custom Python script tools that can be used and shared among GIS users.

Prerequisites: GIS-236

**GIS-238** GIS Web Mapping and Services

2 credits, Not Offered Every Term

This course presents the basic practices involved with GIS Web development. Gain an understanding of web GIS fundamentals. Introduces building GIS web maps, services, and applications. Focuses on developing and publishing on the web using the ESRI suite of web GIS technologies.

Recommended: Familiarity with GIS software and applications

**GIS-270** GIS Capstone

3 credits, Spring

The Geographic Information Systems (GIS) Capstone course is the culmination of the Geographic Information Systems Technology (GIS) Certificate. Working with the instructor, students begin the course by researching and proposing a project. After developing a project plan and working through the analysis necessary, students will present their findings in an oral and written presentation. Additionally, scenario-based assignments will reinforce the project-based analysis process. Throughout the course, portfolio building strategies are explored with an emphasis on developing a professional portfolio demonstrating their work as preparation for entering the GIS profession.

**GIS-280** GIS/CWE

2-6 credits, Fall/Winter/Spring/Summer

Cooperative Work Experience. Provides students with on-the-job work experience in the field of geographic information systems. Variable Credit: 2-6 credits. Required: Student Petition.

Prerequisites: GIS-201

Recommended: This class is intended for students that are completing their GIS Certificate at Clackamas Community College

Corequisites: CWE-281

**GIS-286** Remote Sensing

3 credits, Spring

This course is an introduction to the science of remote sensing. The course explores the techniques used to acquire, interpret, and process remotely sensed data. It provides a historical analysis of the technology, the interpretation of remotely sensed data, and the use of remote sensing data in GIS. Active and passive systems are explored as well as methodologies to transform and rectify remotely sensed raster data. Students explore applications of remote sensing using real-world examples and data.

Prerequisites: GIS-201

## Geography (GEO)

**GEO-100** Introduction to Physical Geography

4 credits, Fall/Winter/Spring/Summer

Analyzes the physical elements of the Earth's surface and atmosphere. Focuses on natural processes that create physical diversity on the Earth including weather and climate, biosphere, soils and landforms and explores how these influence human cultural settlement activities.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**GEO-110** Cultural & Human Geography

4 credits, Fall/Winter/Spring

Introduces geographical perspectives on human population, agriculture, political pattern, language, religion, folk culture, popular culture, ethnic culture, urban development, industry, and transportation as these play out on the diverse landscapes of the world.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**GEO-130** Introduction to Environmental Geography

4 credits, Fall/Winter/Spring

Explores the contemporary global environmental problems such as: overpopulation, over consumption, ozone layer depletion, pollution, acid rain, deforestation, desertification, and waste problems. Examines alternative sources of energy to fossil fuel and sustainable development strategies.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**GEO-208** Geography of the United States & Canada

4 credits, Not Offered Every Term

Provides students with the fundamental geographical knowledge of the United States and Canada and their paths of development. Presents the spatial arrangement of culture, economics, politics, and the natural environment.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**GEO-280** Geography/CWE

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of geography. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

## Geology (G)

**G-101** General Geology

4 credits, Fall

For non-science majors. A lab course introducing geologic principles and concepts; Earth structure, igneous, sedimentary, and metamorphic rock environments, volcanic activity, and landforms. Lab requires students to identify ore minerals, rock forming minerals, igneous, metamorphic and sedimentary rocks.

Recommended Prerequisites: WRD-090 or placement in WRD-098

Corequisites: G-101L

**G-102** General Geology

4 credits, Winter

For non-science majors. An introductory lab course that explores the Earth's systems and surface features. Systems/processes/hazards explored include rivers, mass wasting, glaciers, groundwater, and deserts. Labs focus on geologic and topographic maps and how they are used to understand geologic features and local geology.

Recommended Prerequisites: WRD-090 or placement in WRD-098

Corequisites: G-102L

**G-103** General Geology

4 credits, Spring

For non-science majors. A lab course that examines the geological development of the North American continent through topics such as geologic time, plate tectonics, mountain building earthquakes/faults, and fossils. Examines important events in each geologic era and includes fossil ID, compass use, field techniques and GPS.

Recommended Prerequisites: WRD-090 or placement in WRD-098

Corequisites: G-103L

**G-145** Geology of the Pacific Northwest

4 credits, Not Offered Every Year

An introductory lab course that explores the geology and historic development of Northwest with an emphasis on Oregon geology. Each of Oregon's geologic regions is examined by using basic geologic principles, rock types, hazards and the Northwest's tectonic history.

Corequisites: G-145L

**G-148** Volcanoes & Earthquakes

4 credits, Not Offered Every Year

A lab course that examines the geological processes that create volcanoes and earthquakes and the hazards associated with them. Examines basic geologic features, monitoring techniques, hazards, prediction methods, and future events, using historic episodes of volcanic eruptions and earthquakes.

Required: Two Saturday field trips

Corequisites: G-148L

**G-201** General Geology

4 credits, Fall

For science majors. A lab course introducing geologic principles and concepts; weathering, soils, Earth structure, igneous, sedimentary, metamorphic rocks, volcanic activity, and landforms. Lab requires students to identify ore minerals, rock forming minerals, igneous, metamorphic and sedimentary rocks.

Prerequisites: WRD-090 or placement in WRD-098

Corequisites: G-201L

**G-202** General Geology

4 credits, Winter

For science majors. A lab course that explores surface features of the Earth and the systems that form those features. Systems/processes/hazards explored include rivers, mass wasting, glaciers, groundwater and deserts. Topographic/geologic maps are used to understand geologic features and local geology.

Prerequisites: G-201 with a C or better

Corequisites: G-202L

**G-203** General Geology

4 credits, Spring

For science majors. A lab course that examines the geological development of the North American continent through topics such as geologic time, plate tectonics, mountain building earthquakes/faults, and fossils. Examines important events in each geologic era and includes fossil ID, compass use, field techniques and GPS.

Prerequisites: G-202 with a C or better

Recommended Prerequisites: MTH-065 or placement in MTH-080 or MTH-095

Corequisites: G-203L

## German (GER)

**GER-101** First-Year German I

4 credits, Fall

Introduces the sound system and basic structural patterns of German. Develops the skills of listening comprehension, speaking, reading, and writing. Teaches recognition of cultural similarities and differences. First of a three-term 1st year sequence.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**GER-102** First-Year German II

4 credits, Winter

Introduces the sound system and basic structural patterns of German. Develops the skills of listening comprehension, speaking, reading, and writing. Teaches recognition of cultural similarities and differences.

Second of a three-term 1st year sequence.

Prerequisites: GER-101 or Student Petition

**GER-103** First-Year German III

4 credits, Spring

Introduces the sound system and basic structural patterns of German. Develops the skills of listening comprehension, speaking, reading, and writing. Teaches recognition of cultural similarities and differences. Third of a three-term 1st year sequence.

Prerequisites: GER-102



## Gerontology (GRN)

### GRN-165 Life Enrichment With Older Adults

3 credits, Not Offered Every Term

Course focuses on creating meaningful activities for older adults in various settings, including long-term care and residential facilities. Focuses on creating person-centered programs that provide enriching activities for adults of all levels of cognitive ability. Includes federal guidelines for activities, as well as documentation. Course fulfills requirements for basic certification in the State of Oregon for Activity Professionals.

### GRN-181 Issues in Aging

3 credits, Fall

Provides an introduction to gerontology including the history of aging and current issues. Covers: myths, stereotypes, economic and political aspects, demographics and service availability for aging populations.

### GRN-182 Aging and the Body

3 credits, Winter

Focuses on how aging affects physical health and well-being; impact on body systems, illness, disability, longevity research, wellness and health promotion. For students interested in working with the elderly and those in the field.

### GRN-183 Death and Dying

3 credits, Spring

Introduces effective interaction with those experiencing death or grief process. Includes: historical and cross cultural perspectives, funeral and death rites, grief across the lifespan, hospice and palliative care, ethical considerations and physician aid in dying.

### GRN-184 Aging & the Individual

3 credits, Winter

This course explores the impact of aging on the individual as well as family members, caregivers, and professionals. Topics include: dementia, cognitive issues, stress, coping, life transitions, and intelligence. Course will also discuss the concept of successful aging from cross-cultural perspectives.

### GRN-280 Gerontology/CWE

2-6 credits, Not Offered Every Term

Cooperative work experience. Acquaint gerontology students with the roles and related activities of organizations serving the elderly. This course provides an opportunity to apply theories and techniques learned in the classroom. Variable Credit: 2-6 credits. May be repeated for up to 6 credits. Required: Student Petition.

Prerequisite or Corequisite: HS-170

Corequisites: HS-270

### GRN-290 Special Topics in Gerontology

1-3 credits, Not Offered Every Term

This course gives students an opportunity to gain knowledge in a specific area relevant to the field of aging. This topic will be pulled from a comprehensive list of areas identified by gerontology and healthcare professionals as having importance for students pursuing work in the field. Variable Credit: 1-3 credits. May be repeated for up to 6 credits.

## Health & Fitness (HPE)

### HPE-295 Health & Fitness for Life

3 credits, Fall/Winter/Spring

This course explores interaction of the nine dimensions of wellness (health). All of the related assignments are online. Students will assess their level of the health related components of fitness and develop an exercise plan for maintenance/improvement. Students are expected to spend a minimum of 3 hours per week exercising. Related topics include: nutrition, stress reduction, relaxation techniques, goal setting, and weight control.

Recommended: A completed physical by a doctor

### HPE-296 Health and Fitness for Criminal Justice

3 credits, Winter

This course provides students the knowledge and understanding of the interacting influence of physical fitness and health in all dimensions of wellness. Explores understanding and managing the stressors experienced by law enforcement and corrections personnel. Students will be prepared to complete the Oregon Physical Abilities Test (ORPAT), required by Oregon law enforcement and corrections academies.

## Health (HE)

### HE-163 Body & Drugs I: Introduction to Abuse & Addiction

3 credits, Fall/Winter/Spring/Summer

The first of a four-course sequence, this course examines the history of the use of addictive drugs, the definition of addiction, psychosocial and neurobiological causes of drug and behavioral addiction, addictive drug classifications, and the history of/introduction to addiction treatment, and access and utilize effective resources to improve and maintain mental and physical wellbeing.

### HE-164 Body & Drugs II: Alcohol

3 credits, Not Offered Every Term

The second of a four-course offering. Covers beverage alcohol as a drug, the history of alcohol use/abuse, physiological and psychological effects of alcohol use on the user, and the impact of that use on those around the user and on society at large, access and utilize effective resources to improve and maintain mental and physical wellbeing.

Prerequisites: HE-163

### HE-201 Personal Training

3 credits, Not Offered Every Term

Students will follow the curriculum for the National Council on Strength and Fitness (NCSF) Certified Personal Trainer certification. The course will guide students through the expectations, requirements, processes and knowledge to prepare to become a certified Personal Trainer through the NCSF. Through videos, lecture and self-study, students will be prepared to take the NCSF Certified Personal Training exam, which is offered through the NCSF and is not included in the course.

Recommended Prerequisites: PE-240

### HE-202 Introduction to Fitness Technology Careers

1 credits, Not Offered Every Term

This course will explore the various careers in the Fitness Industry through lecture and guest speakers currently in the professional field. Students will gain insight to the requirements, expectations, salary range, education requirements, and any additional information related to specific careers.

**HE-204 Nutrition & Weight Control**

3 credits, Fall/Winter/Spring

Methods of maintaining or improving nutrition by considering diets and dieting, obesity, types of exercise, physical testing, cardio-vascular fitness and nutritional concepts.

**HE-207 Introduction to Plant Based Living**

3 credits, Not Offered Every Term

The course is designed to give students a basic understanding of a plant based diet/lifestyle and the benefits of this type of lifestyle. Students will learn about the physical benefits of a plant based diet, organic foods, current environmental impacts of the big agricultural companies, animal welfare, and workers' rights as well as the research that has been documented to support the information.

**HE-223 Sports Nutrition**

3 credits, Fall/Winter/Spring

Examination of nutrition as it relates to the demands of exercise and competitive sport. Emphasis on the relationship of diet and exercise to optimal health and performance. This course can lead to a certification as a sports nutritionist through the NCSF.

**HE-249 Mental Health**

3 credits, Fall/Winter/Spring

Designed for each student to understand and improve their personal mental health. Teaches theories of mental health as well as practical strategies for improving one's level of mental health. Analyzes factors that may impede optimal mental health, again with practical solutions for minimizing/avoiding such factors.

**HE-250 Personal Health**

3 credits, Fall/Winter/Spring/Summer

This course is designed to help students gain an overall understanding of information basic to the field of health, to help them critically evaluate health information, and to promote positive attitudes, values, and behaviors in regard to personal health.

**HE-252 First Aid/CPR/AED**

3 credits, Fall/Winter/Spring/Summer

This course supports the American Red Cross program for First Aid/CPR/AED and will teach participants the knowledge and skills needed to give immediate care to an injured or ill person and to decide whether advanced medical care is needed. Successful completion of the course leads to a Red Cross First Aid/CPR/AED certification for the lay responder.

**HE-261 Community CPR**

1 credits, Not Offered Every Term

Basic Plus CPR, AED and First Aid for Adults is designed to train students to recognize and respond to various medical emergencies including: first aid and bandaging, choking, and cardiac emergencies that require CPR or the use of an AED. Bloodborne pathogens are also covered. Passing this course entitles the student to Medic First Aid certification for Cardiopulmonary Resuscitation for Adults.

**HE-263 Body & Drugs III: Marijuana**

3 credits, Not Offered Every Term

The third of a four-course sequence. This course will examine marijuana in all of its forms as a drug and a medicine, as well as its non-drug uses. Explores current research about marijuana's physiological and psychological effects on the user, as well as its addictiveness. Reviews historical and current medical uses of marijuana and cannabinoids, including an overview of Oregon's Medical Marijuana Program. Reviews Oregon's new recreational use legislation.

Prerequisites: HE-163

**HE-264 Body & Drugs IV: Other Drugs, Other Addictions**

3 credits, Not Offered Every Term

The fourth of a four-course offering, this course examines other drugs/addictive behaviors beyond alcohol and marijuana. The class will select the drugs/addictive behaviors (one from each of the following categories: stimulants, depressants, hallucinogens, other drugs/addictions) that they wish to discuss. Students will learn the history and the physiological and psychological impact of the selected drugs. Gambling addiction is a mandatory topic, which is required for the CADC I State certification.

Prerequisites: HE-163

**HE-280 Health/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job experience and training related to the Physical Education field. Covers job problems and procedures, evaluation of students' job performance by qualified college staff and site supervision. Variable Credit: 2-6 credits.

May be repeated for up to 12 credits. Required: Student Petition.

Corequisites: CWE-281

## History (HST)

**HST-101 History of Western Civilization**

4 credits, Fall/Winter/Spring/Summer

Origins and development of Western Civilization with a primary focus on Europe from ancient times to ca. 1300.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**HST-102 History of Western Civilization**

4 credits, Fall/Winter/Spring/Summer

Origins and development of Western Civilization with an emphasis on Europe from ca. 1300 to 1800.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**HST-103 History of Western Civilization**

4 credits, Fall/Winter/Spring/Summer

Development of Western Civilization with an emphasis on Europe from the 19th century to the present.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**HST-130 Oddballs and Outcasts in Western Civilization**

4 credits, Not Offered Every Year

Explores the topic of how oddballs and outcasts from ancient Greece to the present shaped western civilization and places them in the political, social, economic, intellectual and cultural frameworks of their time.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**HST-131 History of Crime & Punishment in Western Civilization**

4 credits, Not Offered Every Year

Explores the topics of crime and punishment in western civilization from ancient Greece to the present and relates them to the political, social, economic, intellectual and cultural trends of each time period.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**HST-132 History of Language and the Written Word in Western Civilization**

4 credits, Not Offered Every Year

Explores the topics of language and the written word in western civilization from ancient Greece to the present and relates them to the political, social, economic, intellectual, and cultural trends of each time period.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**HST-136** History of Popular Culture, Entertainment & Sports in Western Civilization

4 credits, Not Offered Every Year

Explores the topics of popular culture, entertainment and sports in western civilization from ancient Greece to the present and relates them to the political, social, economic, intellectual and cultural trends of each time period.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**HST-137** History of Science, Medicine, & Technology in Western Civilization

4 credits, Not Offered Every Year

Traces the major developments in western civilization in the fields of science, medicine and technology from ancient Greece to the present. Includes an examination of the biographies of prominent scientists, doctors and engineers.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**HST-138** History of Love, Marriage and the Family In Western Civilization

4 credits, Not Offered Every Year

Examines the concept of love and the institutions of marriage and the family in western civilization from ancient Greece to the present. Includes a consideration of the ideas of prominent thinkers, artists and political leaders.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**HST-201** History of the United States

4 credits, Fall

Covers the period in American history from first European contact through the Age of Jackson.

Prerequisite or Corequisite: WRD-098 or placement in WR-121Z

Recommended: Sequence of HST-201, HST-202, and HST-203 is taken in order

**HST-202** History of the United States

4 credits, Winter

Covers the period of United States history from the Age of Jackson to World War I. Recommended that sequence is taken in order.

Prerequisite or Corequisite: WRD-098 or placement in WR-121Z

Recommended Prerequisites: Sequence of HST-201, HST-202, and HST-203 is taken in order

**HST-203** History of the United States

4 credits, Spring

Covers the period of United States history since and including WWI.

Prerequisite or Corequisite: WRD-098 or placement in WR-121Z

Recommended Prerequisites: Sequence of HST-201, HST-202 and HST-203 is taken in order

**HST-280** History/CWE

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of history. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

## Horticulture/Arboriculture/ Landscape/Organic Farming (HOR)

Many horticulture classes will transfer as Lower Division Collegiate (LDC) credits to Oregon State University. For additional information contact April Chastain, Horticulture Department Advisor, 503-594-3055.

**HOR-111** Horticulture Practicum/Fall

2 credits, Fall

Practical experience with seasonal horticulture activities in the areas of container nurseries, greenhouses, landscape management, arboriculture, and organic food production.

**HOR-112** Horticulture Career Exploration

2 credits, Spring

This course is a survey of the various career options available to students in the horticulture industry, with emphasis on nursery and greenhouse production, retail nursery, organic fruit and vegetable production, and landscape maintenance/installation. Includes field trips to local businesses. Oregon State University transfer course.

**HOR-113** Organic Farming Practicum/Fall

3 credits, Fall

Essential organic farming practices, including seasonal activities such as crop rotation, cover cropping, four-season production strategies, soil testing, and calculating soil amendment needs. Class lecture, field trips, and lab are all included components of this course. This format has been selected to create a hands-on experience for each student in seasonal crop production.

**HOR-115** Horticulture Safety

1 credits, Fall

Overview of safe practices in the horticulture workplace which will reduce the chance for accidents and injuries.

**HOR-120** Pesticide Laws & Safety

1 credits, Spring

This course engages students with the laws, regulations, and best management practices used to control pests, weeds, and diseases. Focus on applicator safety, environmental protection, and storage and handling requirements. Prepares students to sit for the Oregon Pesticide Laws & Safety exam.

**HOR-122** Greenhouse I

3 credits, Winter

Environmental influences on plant growth, crop scheduling, greenhouse structures and equipment. Emphasis on foliage and flowering potted plant production.

**HOR-123** Landscape Maintenance

3 credits, Spring

Principles and practices of sustainable landscape maintenance, plant growth and development, soil-water-fertilizer management, pruning, turf, pest control, diagnosis of problems in trees and shrubs, and maintenance scheduling.

**HOR-124** Food Harvest

3 credits, Fall

This course provides a basic knowledge of aspects of harvesting, handling, storing, and marketing of produce from small-scale, organic operations. Topics include: food safety laws and practices, harvest and storage requirements for a variety of crops, factors that impact quality and storage ability, post-harvest biology, Organic certification standards, and regulations for selling value added products. Students in this class will be actively harvesting, washing, packing, and selling produce from the Student Organic Farm.

**HOR-126** Landscape Water Features

1 credits, Not Offered Every Year

Methods used in building water features with emphasis placed on design, material selection, construction and maintenance considerations.

**HOR-127 Landscape Lighting**

1 credits, Not Offered Every Year

Methods used with lighting in the residential landscape, with emphasis placed on design, material selection, installation and maintenance considerations.

**HOR-128 Landscape Stones & Pavers**

1 credits, Not Offered Every Year

Methods used in building walls, patios and walkways out of stones and pavers, with an emphasis placed on design, material selection, construction and maintenance considerations.

**HOR-129 Landscape Decks & Fences**

1 credits, Not Offered Every Year

Methods used in building wood fences and decking with emphasis placed on design, material selection, construction and maintenance considerations.

**HOR-130 Plant Propagation Techniques**

3 credits, Fall

Covers plant anatomy and reproduction techniques of plants from seed, cuttings, grafting, division, and micro-propagation (tissue culture). Offers an in-depth overview of plant propagation practices.

**HOR-131 Tree & Shrub Pruning**

3 credits, Winter

Emphasis on dormant pruning of fruiting and ornamental plants. Pruning and training techniques for grapes, fruit trees, and both evergreen and deciduous ornamental trees and shrubs. Basic woody plant anatomy, growth and development.

**HOR-133 Horticulture Practicum/Winter**

2 credits, Winter

Practical experience with seasonal (winter) horticulture activities in the areas of container nurseries, greenhouses, and landscape management. Prerequisites: HOR-111

**HOR-135 Propagation of Edible Plants**

3 credits, Spring

Reproduce food plants using a variety of methods, including seed, cutting and grafting techniques. Instruction will focus on methods suitable for sustainable farm operations.

**HOR-136 Organic Farming Practicum/Winter**

3 credits, Winter

Essential organic farming practices, including seasonal activities such as ground preparation and planning for crop production. Also covers farm business structures, financial management, recordkeeping, and marketing and distribution techniques. Field trips to area farms included. Class lecture, field trips, and lab are essential components of this course. This format has been selected to create a hands-on experience for each student in seasonal crop production.

**HOR-140 Soils**

3 credits, Spring

Soil characteristics and management, including nutritional elements and the relationship between the soil and plant growth.

**HOR-141 Organic Farming Practicum/Spring**

4 credits, Spring

Essential organic farming practices, including seasonal activities such as production of transplants, direct seeding, pest, disease, and weed management strategies, bed preparation, equipment operations, and soil, water and fertilizer management. Class lecture, field trips, and lab are all included in this course. This format has been selected to create a hands-on experience for each student in seasonal crop production.

**HOR-142 Greenhouse II**

3 credits, Spring

Detailed study of environmental influences on individual crops, their requirements, scheduling, including annual, biennial, and perennial plant production.

Prerequisites: HOR-122

**HOR-143 Horticulture Practicum/Spring**

2 credits, Spring

Practical experience with seasonal (spring) horticulture activities in the areas of container nurseries, greenhouses, and landscape management.

Prerequisites: HOR-133

**HOR-146 Fruit & Berry Growing**

3 credits, Summer

Regionally appropriate fruit and berry production practices that are suitable for urban areas and small farms. Class will utilize the Home Orchard Education Center demonstration arboretum located on campus.

**HOR-211 Native Plant Identification**

1 credits, Summer

Students will learn to identify 50 native plants within the cultural and ecological context of the Pacific Northwest bioregion.

**HOR-215 Herbaceous Perennials**

3 credits, Spring

The identification, propagation, selection and garden culture as well as individual attributes of herbaceous perennial plants, including the evolution of perennial garden design and current gardening styles.

Oregon State University transfer course.

**HOR-216 Integrated Pest Management**

3 credits, Winter

Learn the components of, and develop an Integrated Pest Management (IPM) plan for landscape, nursery, greenhouse or organic farming. The plan will incorporate pest detection, control practices and an evaluation of effectiveness.

**HOR-222 Horticultural Computer Applications**

2 credits, Winter

Utilizes database, spreadsheet, word-processing, PowerPoint, social media and other computer programs for record keeping and management and marketing for horticulture businesses.

Recommended Prerequisites: CS-120 or comparable computer skills

**HOR-223 Applied Plant Science**

4 credits, Fall

An overview of the practical aspects of plant growth and development, classification systems, plant breeding and environmental factors in managing plant growth.

**HOR-224 Landscape Installation**

3 credits, Fall

Materials and practices in landscape installation, including plan reading, materials take-off, estimating, bidding, scheduling, grading, construction materials, and plant installation. Provides an overview of Oregon state landscape contracting and licensing requirements.

Recommended Prerequisites: MTH-050

**HOR-225 Arboriculture I**

3 credits, Fall

Management of trees in residential, commercial, and urban landscapes. Follows course materials prepared by the International Society of Arboriculture (ISA). Topics covered include tree anatomy, selection, installation, response to damage, soil characteristics, pruning techniques and diagnosis of pest problems. Prepares student for Arboriculture II.

**HOR-226** Plant Identification/Fall

4 credits, Fall

Identification of deciduous trees, shrubs, and groundcovers, including their cultural requirements in the landscape. Oregon State University transfer course.

**HOR-227** Plant Identification/Winter

4 credits, Winter

Identification of conifers and broadleaf evergreens, shrubs, and groundcovers, including their cultural requirements in the landscape.

**HOR-228** Plant Identification/Spring

4 credits, Spring

Identification of flowering trees, shrubs, and groundcovers, including their cultural requirements in the landscape. Oregon State University transfer course.

**HOR-229** Introduction to Landscape Design

3 credits, Winter

Introduction to landscape planning, including basic drafting skills, grading, drainage, and site planning.

**HOR-230** Equipment Operation & Maintenance

2 credits, Winter

The selection, safe operation, and maintenance of power driven machines in horticultural operations. Includes hands on experience with mowing equipment, rototillers, chain saws, edgers, shears, tractors, chippers, and skid steer.

Corequisites: HOR-230L

**HOR-231** Irrigation Design

3 credits, Winter

Principles of irrigation system design for various situations, including underground, above-ground, residential, commercial, and urban farm systems.

**HOR-234** Advanced Landscape Design

3 credits, Not Offered Every Year

Further skill development in drawing, site analysis, and design, including two & three dimensional design concepts. Graphic exercises will be included as well as the study of creative and practical solutions for various site and program requirements of small commercial and residential landscape sites.

Prerequisites: HOR-229

Recommended Prerequisites: Prior Plant ID knowledge or HOR-226, HOR-227, and HOR-228

**HOR-235** Weed Identification

2 credits, Fall

Identification and life cycles of weeds commonly found in landscapes, nurseries, and farms.

**HOR-236** Insect Identification

2 credits, Fall

Develop skills to identify common pest and insect life stages that damage or benefit plants in the landscape, farm, and greenhouse.

**HOR-237** Disease Identification

2 credits, Winter

Identification of ornamental plant diseases which occur in greenhouses, landscapes, nurseries, and farms.

**HOR-239** Tree Climber Training

1 credits, Winter

The safe use of rope and saddle tree climbing procedures will be covered through lecture, discussion, and field practice. For beginner to moderately experienced climbers. May be repeated for up to 3 credits.

**HOR-240** Irrigation Practices

3 credits, Spring

Materials, equipment, and methods used to install and repair irrigation systems in landscape areas.

Recommended Prerequisites: HOR-231

**HOR-244** Ecological Landscape Design

3 credits, Not Offered Every Year

Overview of landscape design features that will benefit the natural environment, provide habitat for wildlife and require minimal inputs of energy, water and other materials. Includes basic design concepts, design terminology and techniques, as well as ideas for marketing of sustainable designs.

Prerequisites: HOR-229

Recommended Prerequisites: Prior Plant ID knowledge or HOR-226, HOR-227, and HOR-228

**HOR-246** Organic Farming and Gardening

2 credits, Spring

Overview of the fundamental principles and practices of organic fruit and vegetable production in the Pacific Northwest.

**HOR-250** Herb Growing and Gardening

1 credits, Spring

Study of herb plant propagation and garden use. Identification of herbs, parts of the plant, garden culture, planning, site requirements and care of plants are covered.

**HOR-251** Herbal Products

1 credits, Winter

Instruction in making herbal teas, skin lotion, tincture, infused oil, vinegar, spritzers and herbal mixes. Instruction includes the use of specific ingredients, methods for effective usage and storage, and their importance.

**HOR-252** Kitchen Herbs

1 credits, Fall

Instruction will focus on how to use common herbs and spices in a variety of edible forms.

**HOR-260** Arboriculture II

3 credits, Winter

Evaluation, assessment and management of trees in the urban environment. Covers monetary and ecosystem values for trees, property development considerations, tree appraisals, tree inventories, risk assessments, and crew management. Together with Arboriculture I, this class will prepare students for passing the ISA Certified Arborist exam.

Prerequisites: HOR-225

**HOR-261** Tree Diagnostics

2 credits, Spring

Theory and practice in diagnosing specific biotic and abiotic causes of poor tree health. Includes identification of symptoms, use of monitoring tools and effective customer communications.

Prerequisites: HOR-120, HOR-216, HOR-225. HOR-236 or HOR-237



**HOR-262** Treework Practicum I

2 credits, Fall

Experience with the implementation of basic requirements, equipment and techniques employed by arborists who work aloft. Covers personal protective equipment, safe operation, and common cutting techniques in accordance with current industry standards. Students operate chainsaws in a variety of field exercises, and will gain exposure to other pieces of industry equipment, such as chipper, truck and trailer, and aerial lift. Students will participate as members of a crew, gaining introductory experience in tree pruning, rigging, hardware installation, electrical hazard awareness, aerial rescue, ground work, and work site management. Prerequisites: HOR-115, HOR-131, and HOR-239

**HOR-263** Plant Health Care Practicum

2 credits, Spring

Experience best management practices in Plant Health Care for trees and shrubs of the Pacific Northwest. Synthesize information from pre-requisite courses to evaluate work sites for risk, plant health, and pathogens. Propose maintenance schedules and adapt them based on customer interaction. Working as a team, maintain landscapes on CCC properties using hand and power tools such as shears, saws, mowers, chippers, and sprayers.

Prerequisites: HOR-115, HOR-131 and HOR-216. HOR-236 or HOR-237

**HOR-264** Treework Practicum II (Aerial)

2 credits, Fall

Experience with the implementation of intermediate requirements, using equipment and techniques employed by arborists who work aloft. Reinforces personal protective equipment, safe operation, and common cutting techniques in accordance with current industry standards. Students operate chainsaws in a variety of field exercises, and will gain exposure to other pieces of industry equipment, such as chipper, truck and trailer, and aerial lift. Students will participate as members of a crew, gaining additional experience in tree pruning, rigging, hardware installation, electrical hazard awareness, aerial rescue, ground work, and work site management.

Prerequisites: HOR-262

**HOR-280** Horticulture/CWE

3 credits, Fall/Winter/Spring/Summer

On-the-job experience in the student's major course of study. Students are allowed to enroll after completing nine credits of horticulture courses. May be repeated for up to 6 credits. Required: Student Petition. Required: Students are expected to work a minimum of 90 job site hours Corequisites: CWE-281

**HOR-281** Horticulture/CWE

6 credits, Fall/Winter/Spring/Summer

On-the-job experience in the student's major course of study. Students are allowed to enroll after completing nine credits of horticulture courses. May be repeated for up to 12 credits. Required: Student Petition. Required: Students are expected to work a minimum of 180 job site hours Corequisites: CWE-281

**HOR-282** Horticulture/CWE

3 credits, Fall/Winter/Spring/Summer

On-the-job experience in the student's major course of study. Students are allowed to enroll after completing nine credits of horticulture courses. May be repeated for up to 6 credits. Required: Student Petition. Required: Students are expected to work a minimum of 90 job site hours Corequisites: CWE-281

**HOR-284** Organic Farming Practicum/Summer

3 credits, Summer

Experiential learning of organic farming techniques, while working on the Student Farm. Students learn ecological and sustainable practices, principles, and management strategies. This course includes the seasonal activities of a working, small scale Organic Farm: seed sowing, planting, cultivation, irrigation, harvest, packing, selling at farmers market and to restaurants. An important aspect of this course is participating in the on-campus, weekly farmers market. All tasks are hands-on and guided by the instructor. This format has been selected to create a hands-on experience for each student in seasonal crop production and marketing. Prerequisites: HOR-141 or Student Petition

**HOR-285** Organic Farming/CWE

3 credits, Fall/Winter/Spring/Summer

On-the-job experience working with an agricultural business/farm. Students are allowed to enroll in CWE after completing nine credits of Organic Farming courses. May be repeated for up to 6 credits. Required: Student Petition. Required: Students are expected to work a minimum of 90 job site hours Corequisites: CWE-281

**HOR-290** Special Topics in Horticulture

1-3 credits, Winter

This course gives students an opportunity to gain knowledge in a specific area relevant to the field of horticulture, landscaping, arboriculture or organic farming. This topic will be pulled from a comprehensive list of areas identified by horticulture professionals as having importance for students pursuing work in the field. Variable Credit: 1-3 credits. May be repeated for up to 6 credits. Required: Student Petition.

## Human Development/Career Planning (HD)

**HD-102** Service Learning Experience

1-6 credits, Fall/Winter/Spring/Summer

Provides students with a service learning experience in a community setting. Students complete 30-180 hours of volunteer work and participate in ongoing journaling as well as reflection exercises to connect volunteer work with an area of study. Variable Credit: 1-6 credits. 30 hours of service required for each 1 credit earned. May be repeated for up to 6 credits. Required: Student Petition.

**HD-121** College Success

3 credits, Fall/Winter/Spring

Provides strategies for creating college success by understanding one's role in their learning and by gaining critical skills necessary to learn across contexts.

**HD-138** Understanding and Managing Anxiety and Depression

3 credits, Fall/Winter/Spring

Identifies components of anxiety and depression, contexts in which anxiety and depression occur, and solutions for coping with anxiety and depression symptoms through the use of various anxiety and depression management techniques.

**HD-140** Career Exploration

3 credits, Fall/Winter/Spring

Students use information about themselves (values, interests, personality and skills) and information about the world of work (careers and industries) to explore and make long term career decisions.

**HD-144 Assertiveness**

1 credits, Not Offered Every Term

Students can use this course to develop assertiveness in their communication and interpersonal relationships. The course focuses on identifying and meeting personal needs, setting boundaries, and asserting oneself in career, social, and personal settings.

**HD-145 Stress Management**

1 credits, Not Offered Every Term

Identifies specific personal stressors and focuses on developing skills that enable students to deal more effectively with stress.

**HD-146 Values Clarification - The Talk You Walk**

1 credits, Not Offered Every Term

Helps students examine beliefs, attitudes, and values behind decisions and actions. The students will examine whether behavior matches their stated beliefs, evaluate the consequences of choices, and focus on clarifying a personal value system.

**HD-147 Decision Making**

1 credits, Not Offered Every Term

Develop and improve the personal process for making healthy, satisfying choices. The basics of decision-making and processes for making personal, social, and work choices are included. Use this class for current decision needs.

**HD-153 Managing Conflict in Your Life**

1 credits, Not Offered Every Year

Introduction to managing conflict in a positive and efficient way. Students will examine personal beliefs about conflict and become familiar with techniques for effective problem solving.

**HD-154 Building Self-Confidence**

1 credits, Not Offered Every Term

This course is designed to address the elements forming and influencing self-confidence as well as practicing techniques on disarming your inner critic, dealing with fear, reflection of confidence on self-esteem, personal power, and building on personal accomplishments and assets.

**HD-156 Creative Goal Setting**

1 credits, Not Offered Every Term

Using a variety of media, learn how to use the creative process to define, plan, and achieve personal or professional goals.

**HD-157 Procrastination & Time Management**

1 credits, Not Offered Every Term

Provides students the opportunity to study their procrastination habits and time management patterns. Course focuses on components of time organization, choices regarding procrastination, and methods to improve overall use of time.

**HD-161 Multicultural Awareness**

3 credits, Not Offered Every Term

Introduction to the skills and personal attributes college graduates need to live and work in a diverse world, and how these characteristics influence interpersonal relationships in everyday life. This course focuses on the identification and application of strategies to improve personal multicultural awareness.

**HD-202 Life Transitions**

3 credits, Fall/Winter/Spring

Examines process and stages of life transitions. Helps re-entry adults identify personal strengths and barriers related to success in education and employment. Offers opportunities to practice interpersonal skills. Provides information about CCC campus and community resources which can assist students in reaching their goals.

Corequisites: HD-208

**HD-208 Career & Life Planning**

3 credits, Fall/Winter/Spring

Helps re-entry adults identify interests, abilities, values, and transferable skills and apply this information to goal setting and career decisions. Students identify and explore options for training, education, and employment. Covers job search skills such as interviewing, resume writing, and developing a career portfolio. Each student develops an action plan identifying goals and next steps.

Corequisites: HD-202

**HD-209 Job Search Skills**

1-3 credits, Not Offered Every Term

Use a Job Search Plan to conduct labor market research, develop job search networking relationships, and to prepare and present applications, cover letters, resumes, interviews, and thank you notes. Variable Credit: 1-3 credits.

**HD-220 Leadership: Theory Into Practice**

2 credits, Fall

Introduces leadership skills and theories. Includes translating theory into practice. Students discuss how leadership practices are put to use in campus leadership roles.

Required: Required for members of CCC's Associated Student Government or a Peer Assistant (that have not previously taken this course)

**HD-221 Leadership: Group Dynamics**

2 credits, Winter

Develops leadership skills with an emphasis on group dynamics. Addresses building common vision and goals, managing conflict, negotiation, and collaboration. Includes the role of follower and avoiding ineffective group dynamics.

Required: Required for members of CCC's Associated Student Government or a Peer Assistant (that have not previously taken this course)

**HD-222 Leadership: Building Community**

2 credits, Spring

Strengthens leadership skills with an emphasis on building community. Addresses diversity issues, deliberation, building consensus, ethical leadership and followership, and influence. Includes the role of leaders in the planning, implementation and assessment of community service events.

Required: Required for members of CCC's Associated Student Government or a Peer Assistant (that have not previously taken this course)

**HD-280 Human Development/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with career-related experience in the field of Human Development or Leadership. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

## Human Development/Family Services (HDF)

**HDF-140 Contemporary American Families**

3 credits, Spring

This course focuses on the diversity of the American family today and a historical overview of changes in the family environment and structure. Topics will include internal/external factors that influence families such as parenting, culture, gender, divorce, remarriage, economics, and culture.

**HDF-225** Prenatal, Infant & Toddler Development

3 credits, Winter

Explores the principles of child development, prenatal through three years of age. Emphasis will be placed on the physical, cognitive, and social-emotional development of young children. The impact of family dynamics, culture and socio-economic status on children's development will be explored.

**HDF-225ES** Desarrollo de las Etapas Prenatal, Infantes y de Niños Pequeños

4 credits, Fall

Se enfoca en la exploración del desarrollo y factores que influyen áreas relacionadas con lo físico, cognitivo y socio-emocional en los niños desde la etapa prenatal hasta los tres años de edad. Se examinarán teorías relacionadas con estas etapas, así como la influencia del lenguaje y la cultura en el desarrollo y crianza.

**HDF-247** Preschool Through Adolescent Child Development

3 credits, Spring

This course focuses on principles of development in children three years old through adolescence, including physical, cognitive, language, and social and emotional growth. Explores major historical theories of child development and current research and practices. A focus on how culture, family dynamics, and socio-economic status impact growth and development are included.

Prerequisites: HDF-225

**HDF-247ES** Desarrollo y crecimiento en la niñez: preescolar hasta la adolescencia

4 credits, Winter

Este curso se enfoca en los principios del desarrollo en niños de tres años hasta la adolescencia, incluyendo el crecimiento, y la evolución física, cognitiva, social y emocional. Explora las principales teorías históricas del desarrollo infantil y las investigaciones y prácticas actuales. Se incluye un enfoque en cómo la cultura, la dinámica familiar y el estatus socioeconómico impactan el crecimiento y el desarrollo de los niños.

Prerequisites: HDF-225ES

**HDF-260** Understanding Child Abuse and Neglect

3 credits, Fall/Winter/Spring

In this course, students will receive an overview of child abuse and neglect. Students will examine the types and causes of abuse, abused children, abusive parents, treatment, education and prevention, and resources available to assist children and families. An emphasis is placed on intervention and mandatory reporting, as well as risks and outcomes. This course discusses the investigation process of child welfare and forensic interviewing of abused children. Students will also learn about the signs and symptoms of abuse and how trauma impacts an individual's health across a lifetime.

**HDF-260ES** Entender el Abuso y la Negligencia Infantil

3 credits, Spring

Este curso ofrece una descripción general del abuso y la negligencia infantil. Los estudiantes examinarán los tipos y las causas de abuso, como también el perfil típico de un niño abusado y de los padres abusivos. Se examinarán igualmente el tratamiento, la educación y prevención, y los recursos disponibles para ayudar a niños y familias. Se hace hincapié en la intervención y los informes obligatorios, así como en las investigaciones sobre el abuso y las consideraciones legales.

## Human Services (HS)

**HS-100** Introduction to Human Services

3 credits, Fall/Spring

This course provides an overview of the human services field. The course includes the history of human services with a focus on the diverse roots of the field. Students will get an overview of the various careers and educational options available in human services, as well as an opportunity to discuss the student's own abilities and goals.

**HS-103** Ethics for Human Service Workers

2 credits, Summer/Winter

Explores the professional issues students will face when in a helping relationship. Introduces the professional codes of ethics associated with the helping professions. Addresses solving ethical dilemmas using professional guidelines. Topics include client rights, confidentiality, professional boundaries, legal issues in helping, competence, and cultural diversity.

**HS-104** Using Diagnostic Criteria in Addiction Treatment

1 credits, Winter

This course will present an overview of The American Society of Addiction Medicine (ASAM) Criteria and the Diagnostic and Statistical Manual (DSM) criteria related to addiction and substance use. Students will gain familiarity with the use of the ASAM Criteria to enhance the use of multidimensional assessments to develop patient-centered service plans. Students will also gain knowledge about the use of the DSM Manual to guide diagnosis and treatment of Substance Use Disorders.

**HS-154** Community Resources

3 credits, Winter

Explores local community social service resources. Focuses on local agencies and programs, including services provided, eligibility criteria, mission, and policies of these agencies. Includes instruction in identifying client needs, various referral processes, and historical, political and social trends.

**HS-156** Conducting Human Service Interviews

3 credits, Winter/Spring

Provides the specific techniques required for entry-level interviewing in human service settings. Addresses issues raised in working with clients from diverse backgrounds.

**HS-170** Preparation for Field Experience in Human Services

1 credits, Fall/Spring

This course prepares students to complete fieldwork in Human Services. Covers developing learning objectives and creating successful field placements as well as the specific steps required to complete a Cooperative Work Experience at Clackamas Community College. Required: Student Petition.

Prerequisites: HS-100 or HS-154

Recommended Prerequisites: At least 30 credits of the Human Services program, including 6 credits from HS-100, HS-103, HS-154, HS-156, and HS-206

**HS-206 Trauma Informed Practices**

3 credits, Fall/Spring

In this course, students will learn how to recognize and respond to the impact of traumatic stress. Students will gain knowledge and skills they can infuse into their practices and act in a way that maximizes physical and psychological safety for clients and themselves. Students will understand how trauma impacts the brain, body, as well as development. Topics such as vicarious trauma, cultural trauma, and secondary trauma will be examined and discussed.

Recommended Prerequisites: CJA-101 or HS-100 or any other 100-level course that discusses human behavior, development, or social interactions

**HS-210 Motivational Interviewing**

3 credits, Summer/Fall

Students taking this course will learn a client-centered approach to working with a variety of populations that are ambivalent towards change or are even mandated to make a change (court-ordered populations). Motivational Interviewing is recognized as a core component of various interventions service providers use, including those in substance abuse/addiction services, mental health, primary healthcare, education, and criminal justice. These skills include interviewing and listening, identifying ambivalence and change talk, strengthening resolve to change, and internal motivation of populations served.

Recommended Prerequisites: HS-156

**HS-211 Infectious Diseases and Harm Reduction**

1 credits, Summer/Winter

This course will explore the relationship between substance use and infectious diseases, and discuss methods for reducing transmission of these diseases. Diseases will include HIV/AIDS, tuberculosis, hepatitis, and sexually transmitted infections. This course will provide students with techniques for assisting clients with assessing risk, practicing harm reduction, and evaluating treatment options.

**HS-216 Group Counseling Skills**

3 credits, Winter/Spring

This course provides students with strategies and skills for group work with a variety of clients. Explores leadership styles and skills, group formation and stages, and the ethics of working with groups. The course will address the knowledge needed to develop, run, and evaluate groups for a variety of human service topics, including substance use treatment. Theories of therapeutic group work will also be discussed.

Prerequisites: HS-156 with a C or better

**HS-232 Case Management**

3 credits, Spring

Introduces case management techniques used by corrections and human services professionals in one-on-one and group contacts with clients. Explores a variety of case management materials, with an emphasis placed upon objective case planning and monitoring.

Prerequisite or Corequisite: HS-156 and HS-210

**HS-256 Advanced Interviewing Skills With Theory**

3 credits, Winter

This course is designed to help human service students further develop and deepen their skills and understanding of interviewing in the human service field. Course will build on skills learned in HS-156, incorporating the use of behavior change theories to guide the helping process.

Prerequisites: HS-156 with a C or better

**HS-270 Human Services Practicum Seminar**

2 credits, Fall/Winter/Spring/Summer

Focuses on field experience for students in a variety of human service settings, paralleling duties regularly assigned to human service workers. The course offers students a chance to discuss issues faced in the field, and apply human services concepts and theories to their work. Students will reflect on program curriculum and how their knowledge influences the work in the field. May be repeated for up to 6 credits. Required: Student Petition.

Corequisites: GRN-280, HS-280, HS-281, or HS-282

**HS-280 Human Services Generalist I: CWE/Practicum**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology; and other occupations. Variable Credit: 2-6 credits. May be repeated for up to 12 credits. Required: Student Petition.

Prerequisites: HS-170

Corequisites: HS-270

**HS-281 Human Services Generalist II: CWE/Practicum**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience level II. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology; and other related occupations. Variable Credit: 2-6 credits. May be repeated for up to 12 credits.

Required: Student Petition.

Prerequisites: HS-170

Corequisites: HS-270

**HS-282 Human Services Generalist III: CWE/Practicum**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience level III. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology, and other related occupations. Variable Credit: 2-6 credits. May be repeated for up to 12 credits.

Required: Student Petition.

Prerequisites: HS-170.

HS-280 or HS-281

Corequisites: CWE-281

**HS-290 Special Topics in Human Services**

1-3 credits, Not Offered Every Year

This course gives students an opportunity to gain knowledge in a specific area relevant to the field of human services. This topic will be pulled from a comprehensive list identified by human service professionals as having importance for students pursuing work in this field. Variable Credit: 1-3 credits. May be repeated for up to 6 credits.

## Humanities (HUM)

**HUM-160 Faith & Reason**

4 credits, Not Offered Every Term

An introduction of how personal concepts of faith & reason and institutions of science & religion shape personal intellectual landscapes. Examines classical philosophy, sacred texts, worldviews, modern fiction, poetry, theology, cosmology, and evolutionary biology.

Recommended Prerequisites: WRD-098 or placement in WR-121Z



**HUM-235 Perspectives on Terrorism**

4 credits, Not Offered Every Term

Examines multiple perspectives of terrorism and investigates their assumptions and beliefs. Perspectives will include historical and psychological approaches as well as those of other academic disciplines, including art, literature, religion, and philosophy.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**HUM-237 Perspectives on Democracy and Dialogue**

4 credits, Not Offered Every Term

This course gives students the opportunity to practice the fundamental keystone of democracy: dialogue. The course will explore the variety of American political thought and philosophies through conversations with others in the community, crossing the political spectrum as well as broaching the lines of urban/rural context, socio-economic class, racial and ethnic identity, sex-gender identification, sexuality, age, religious affiliation and non-affiliation, and spiritual practices.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**HUM-240 American Military Conflict: Wars of National Identity**

4 credits, Not Offered Every Term

Examines America's wars of national identity, principally the American Revolution and the Civil War. Explores characteristics of such wars, variations over time and space, and shaping influences and impacts on American society and culture, both military and civilian.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**HUM-241 American Military Conflict: Global War**

4 credits, Not Offered Every Term

Examines America as a global power in 20th Century conflicts--World Wars I and II, the Cold War and possible future global conflicts. Explores characteristics of global war, variations over time and space, and shaping influences and impacts on American society and culture, both military and civilian.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**HUM-242 American Military Conflict: Asymmetric Warfare**

4 credits, Not Offered Every Term

Examines America's military experience in asymmetric conflicts from colonial times to the present. Explores characteristics of asymmetric war, variations over time and space, and impacts on American society and culture, both military and civilian.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

## Industrial Maintenance Technology (IMT)

For additional information, contact the Industrial Technology Department at 503-594-3318.

**IMT-104 Reading Schematics and Symbols**

2 credits, Not Offered Every Term

A basic course of study that will develop the student's understanding of reading schematics and symbols through lectures and hands-on examples.

**IMT-108 Rigging and Lifting**

2 credits, Fall

This course provides instruction in rigging and lifting techniques including usage and inspection of rigging equipment, developing lift plans, anchoring to concrete, and heavy machinery installation. Students will be expected to perform lifts independently and in groups.

Prerequisites: MTH-050

**IMT-110 Preventative Maintenance**

2 credits, Spring

This course will introduce students to the basics of preventative maintenance programs in an industrial environment. Students will learn about how maintenance departments are organized, how projects and tasks are defined and delegated. Topics will include maintenance organization, work order systems, maintenance planning, scheduling, quality control, controlling parts and materials costs.

Prerequisites: MTH-050

**IMT-120 Industrial Machinery I**

3 credits, Winter

This course will introduce students to industrial machinery and power equipment with respect to industrial maintenance. Students will learn the fundamentals of electro-mechanical machinery repair, assembly and disassembly and how to work safely around mechanical equipment and power tools. Topics discussed will include hand and power tools, preventative maintenance, power transmission systems, fasteners and torque.

Recommended Prerequisites: MTH-050 or higher

**IMT-220 Industrial Machinery II**

3 credits, Spring

This second course in industrial machinery will focus on advanced concepts in machinery trouble shooting, repair and maintenance. Students will learn about the integration of mechanical, fluid power and electrical systems, their characteristics and repair. Additionally, mechanical concepts of laser shaft alignment, vibration analysis and thermal diagnosis will be covered. Other topics will include electromechanical systems, lock-out tag-out, advanced mechanical diagnosis, motors and motor controls.

Prerequisites: IMT-120

**IMT-223 Instrumentation & Controls**

3 credits, Spring

Introduction to control systems and instrumentation. Includes open and closed loop systems. Focuses on the use of switches, sensors, and relays to control processes.

Prerequisites: EET-137 or MFG-130

Recommended Prerequisites: EET-141 or MFG-131

**IMT-230 Introduction to Heating, Ventilation, and Air Conditioning**

3 credits, Not Offered Every Term

This course will introduce students to commercial and residential Heating, Ventilation, and Air Conditioning (HVAC) systems. Students will study HVAC terminology, heating systems, the refrigeration cycle, low voltage controls, basics of air flow and ventilation as well as safety practices while working on these systems. There will be many opportunities for hands-on experience using trainer devices in a lab setting that will include exercises for troubleshooting, understanding controls, and basic system performance and function.

## Journalism (J)

**J-134 Photojournalism**

4 credits, Not Offered Every Term

Introduces the student to photojournalism, emphasizing composition, lighting and creative ways to illustrate a news story through photography.



**J-211 Mass Media & Society**

4 credits, Fall/Winter/Spring

This course takes students through a critical study of the production and consumption of mass media, including television, radio, books, film, news, advertising and the internet. Students also examine the economic and social organization of mass media, the growth of new media technologies, and the relationship between media and the public. Recommended Prerequisites: WRD-098 or placement in WR-121Z

**J-215 College News: Writing & Photography**

4 credits, Fall/Winter/Spring

Students work as writers, photographers and editors on The Clackamas Print, the college's student-run news website, newspaper and social media sites. Students study and produce journalism stories and photos. In doing so, they learn different writing styles, photography rules, ethical standards of news gathering and the rights of a free press in a democracy. May be repeated for up to 8 credits.

Recommended Prerequisites: Placement in WR-121Z

**J-216 Writing for Media**

4 credits, Not Offered Every Term

Introduces students to the fundamentals of writing for various media including journalism, public relations and other communications-related fields. Topics include news gathering, interviewing and media law, with an emphasis on writing for the web, print, broadcast and social media.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**J-220 Podcasting and Video Journalism**

4 credits, Not Offered Every Term

Students will learn to produce and publish audio and video news stories for a variety of media, including podcasting platforms, YouTube and social media.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**J-221 Intermediate Podcasting and Video Journalism**

4 credits, Not Offered Every Term

Students will learn intermediate skills to produce and publish audio and video news stories for a variety of media, including podcasting platforms, YouTube and social media.

Prerequisites: J-220 with a C or better

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**J-225 Intermediate College News: Writing & Photography**

4 credits, Fall/Winter/Spring

Intermediate news writing and photojournalism for publication in the student-run Clackamas Print news website, newspaper and social media sites. Generate original story ideas, publish photo essays and complete more complicated interviews on multiple projects in news, arts, sports and opinion writing. Apply media ethics to social, online and print media. May be repeated for up to 8 credits.

Prerequisites: J-215

Recommended Prerequisites: Placement in WR-121Z

**J-226 Introduction to College News: Design & Production**

4 credits, Fall/Winter/Spring

Students work as designers and media creators for The Clackamas Print, the college's award-winning student newspaper, website and social media sites. Students design the student newspaper, create social media posts and produce related multimedia content using Adobe software and other products. May be repeated for up to 8 credits.

Recommended Prerequisites: Placement in WR-121Z

**J-227 Intermediate College News: Design & Production**

4 credits, Fall/Winter/Spring

Offers students intermediate work as designers and media creators for The Clackamas Print, the college's award-winning student newspaper, website and social media sites. Students design the student newspaper, create social media posts and produce related multimedia journalism content using Adobe software and other products. May be repeated for up to 8 credits.

Prerequisites: J-226

**J-228 Advanced College News: Design & Production**

4 credits, Fall/Winter/Spring

Offers students advanced work as designers and media creators for The Clackamas Print, the college's award-winning student newspaper, website and social media sites. Students design the student newspaper, create social media posts and produce related multimedia journalism content using Adobe software and other products. May be repeated for up to 8 credits.

Prerequisites: J-227

**J-235 Advanced College News: Writing & Photography**

4 credits, Fall/Winter/Spring

Advanced news writing and photography for publication online, in social media and in the student-run newspaper, The Clackamas Print. Students apply Associated Press style, use journalism ethics and cover a variety of topics and events in words and photos to build their journalism portfolios. May be repeated for up to 8 credits.

Prerequisites: J-225

Recommended Prerequisites: Placement in WR-121Z

**J-280 Journalism/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides the student with on-the-job experience and training related to journalism. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

**J-280A Public Relations/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides the student with on-the-job experience and training related to public relations. Variable Credit: 2-6 credits. Required: Student Petition.

## Library (LIB)

**LIB-101 Introduction to Library Research**

1 credits, Fall/Winter/Spring/Summer

Introduces and strengthens college-level research skills. Students will build an understanding of strategies for finding, evaluating, and using information responsibly. Prepares students for success in research-based college assignments and real-life research needs.

## Machine Tool Technology (MTT)

**MTT-111 Manual Machining I**

4 credits, Fall/Winter

This course is an introduction to machine tool operation and precision measurement. It covers elementary operation of drill presses, bandsaws, lathes, and milling machines. The course includes external threading.

Recommended Prerequisite Or Corequisite: MFG-104 and MTH-050

**MTT-112 Manual Machining II**

4 credits, Winter/Spring

This course is a continuation of machine tool operations. It covers set-up and operation of the vertical milling machine, lathe boring techniques, surface grinding and screw thread nomenclature.

Prerequisites: MTT-111

**MTT-113 Manual Machining III**

4 credits, Spring/Summer

This course is a continuation of machine tool operations. Topics covered include offset boring heads, rotary tables, indexing devices, taper attachments and cylindrical grinding. Additional emphasis is also placed on inspections technique, technical math and optical comparators.

Prerequisites: MTT-112

**MTT-121 CNC I: Set-Up and Operation**

4 credits, Fall/Winter

This is the first course in the CNC sequence. Students will learn basic skills including how to properly set-up and operate both CNC milling and turning centers. Students will also learn G & M codes related to basic machine set-up and operation. Designed for persons with little or no previous CNC experience.

**MTT-122 CNC II: Programming and Operation**

4 credits, Winter

This is the second course in the CNC sequence. Students will learn G&M-code programming for milling and turning while they build their set-up and operation skills. There will also be an introduction to set-up probing, 4-axis mill programming and machining, sub-programming and process documentation.

Prerequisites: MTT-111, MTT-121, MTH-050

**MTT-123 CNC III: Applied Programming and Operation**

4 credits, Spring

This is the third course in the CNC sequence. Students will build their CNC programming, set-up, and operation skills. They will work individually or in small groups to design, program, manufacture, and test advanced projects using CNC mills, CNC lathes, multi-axis/process machine tools, and various software applications.

Prerequisites: MTT-122 and MTH-080

**MTT-141 CAD/CAM I**

4 credits, Spring

This course is the first in the CAM series and will introduce students to computer-aided part creation and programming. Students will use CAD/CAM software to generate Numerical Control (NC) code to produce machined products. Model creation, process verification, code generation, and CAD/CAM integration will be covered.

Recommended Prerequisites: MTT-121

**MTT-241 CAD/CAM II**

4 credits, Fall

This course is the second in the Computer-Aided Machining (CAM) series and will greatly expand the student's existing CAD/CAM skills by exploring more advanced software features and programming techniques. There will be a strong emphasis placed on the entire CAD/CAM/CNC part machining process. An introduction to 4-axis mill programming will be included.

Prerequisites: MTT-122 and MTT-141

**MTT-242 CAD/CAM III**

4 credits, Winter

This course is the third in the Computer-Aided Machining (CAM) series and will build on the previous course. Students will use CAD/CAM software to produce CNC parts. There will be an emphasis on multiple operations on both CNC milling and turning machines. An introduction to five-axis and mill/turn machining will be included.

Prerequisites: MTT-241

**MTT-252 Macro Programming and Machine Probing**

3 credits, Fall

This course is an introduction to Fanuc-based, custom macro programming for individuals with some previous G&M-code programming experience. Students will learn to define and apply macro variables, program branching, macro functions and operators and implement repetitive looping. Additional topics will include custom alarms and assignment of G & M codes to macros. Students will write and prove out programs on HAAS CNC controls utilizing all basic functions of the language using Renishaw touch probes.

Recommended Prerequisites: Competence with basic G&M-code mill programming (FANUC/Haas-style) or MTT-123

**MTT-253 5-Axis Machining**

3 credits, Winter

This class will introduce students to 5-axis CNC milling machines, their programming, and setup procedures. The course will explore limitations, advantages, and configurations of typical 5-axis machines including rotation style and set-up orientation. Post processing and virtual machine simulation will also be discussed.

Prerequisites: MTT-123

**MTT-254 Mill/Turn Machining**

3 credits, Spring

This class will introduce students to CNC mill-turn machines, their programming, and setup procedures. The course will explore limitations, advantages, and configurations of typical mill/turn machines including rotation style and set-up orientation. Post processing and virtual machine simulation will also be discussed.

Prerequisites: MTT-123

**MTT-268 Capstone Machining I**

3 credits, Winter

This is the first of the capstone project series and will allow students to demonstrate mastery of core skills that are learned in the machining program including: CNC setup and operation, manual machining, CAM programming, and surface grinding. This class will focus on importing models, process development, and programming components to be run on a CNC machine tool.

Prerequisites: MTT-113, MTT-123, MTT-141

Recommended Corequisite: MTT-242

**MTT-269 Capstone Machining II**

3 credits, Spring

This final course in the capstone project series will continue to allow students to demonstrate mastery of core skills that are learned in the machining program while manufacturing a complex product. Special emphasis will be given to 4 and 5-axis CNC machining and programming, material preparation for CNC machining, and precision surface grinding. May be repeated for up to 3 credits.

Prerequisites: MTT-268

# Manufacturing Engineering Technology (MET)

For additional information, contact the Industrial Technology Department at 503-594-3318.

**MET-112** Introduction to Engineering and Technology Careers  
2 credits, Fall/Winter/Spring

This course is designed to provide an overview of five major engineering disciplines, their subsets and their respective career pathways. The course will also introduce students to the economic, environmental, social, political, ethical, as well as the health and safety realities of the engineering work environment. This course is intended to guide students in making appropriate career choices by exploring the following topics: engineering job demands, earning potential, marketability, licensure, and continuing education requirements.

**MET-150** Principles of Engineering - Project Lead The Way  
6 credits, Not Offered Every Term

Introduces students to the fields of engineering and engineering technology. Explores various engineering systems and processes and how math, science and technology are used in the engineering problem solving process. Includes concerns about social and political consequences of technological change. This course is part of the national Project Lead the Way curriculum.

**MET-170** Introduction to Manufacturing Processes  
3 credits, Spring

This is a survey course to introduce students to the fundamental processes that are used to manufacture everyday products. Includes machining, casting, forming, welding, molding, composites and microelectronics fabrication.

# Manufacturing Technology (MFG)

For additional information, contact the Industrial Technology Department at 503-594-3318.

**MFG-OSU** Introduction to Mechatronics  
3 credits, Spring  
MFGE-241 through Oregon State University (OSU)

**MFG-102** Makerspace: An Introduction to Digital Manufacturing  
1-3 credits, Not Offered Every Term

This course introduces students to aspects of digital design and manufacturing through the use of sophisticated modeling software; 3-D printing, laser cutting and scanning; and CNC machining. Students will complete a series of hands-on projects that require imagination and determination while learning solid workmanship principles. Variable Credit: 1-3 credits.

**MFG-103** Machining for Fabrication & Maintenance  
3 credits, Fall/Winter

This course is an introduction to metal working for welders, fabricators, maintenance personnel and others who need to understand simple machining principles. Students will be introduced to precision measurement with calipers and micrometers. Combination squares, protractor dividers and scribes will be used for semi-precision layout of workpieces in preparation for machining. The elementary use of the drill press, band saw, milling machine and lathe, as well as hand tools, will be practiced during hands-on labs. A discussion of thread systems will include nomenclature, measurement, tapping, chasing and repair.

Prerequisites: MTH-050

**MFG-104** Print Reading  
3 credits, Fall/Winter/Spring

Introduction to basic print reading. Students will use the principles of orthographic projection and current industry standards as they apply this knowledge to interpreting manufacturing prints.

**MFG-105** Dimensional Inspection  
2 credits, Winter

Covers precision measuring tools such as micrometers, dial indicators, gauge blocks, sine bars and other instruments used in quality control of manufactured products.

Prerequisites: MFG-104

**MFG-106** Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing  
1-3 credits, Fall

Introduces participants to the application of gauging and inspection using Geometric Dimensioning and Tolerancing (GDT). Students will identify inspection equipment and inspect GDT characteristics while experiencing their manufacturing implications. Variable Credit: 1-3 credits.

Prerequisites: MFG-104

**MFG-107** Industrial Safety & First Aid  
3 credits, Fall/Winter/Spring/Summer

This course is designed to provide the student with a basic understanding of safety hazards and first aid in the workplace. Includes eye safety, grinding wheel hazards, electrical/chemical hazards, slips, falls and back injuries. Instruction in first aid, AED and CPR and OSHA 10.

**MFG-109** Computer Literacy for Technicians  
3 credits, Fall/Winter/Spring

Presents the uses of computers in business and industry. Subjects covered include computer platforms, basic hardware, data communication and operating systems. Reviews & uses word processing, spreadsheet and database software for the PC.

**MFG-110** Manufacturing Special Projects  
1-9 credits, Fall/Winter/Spring

Allows students a great deal of latitude in project selection, design & production utilizing manual machine tools, CNC machine tools, CAD/CAM and electrical discharge machines. A solid understanding of all basic machine tools is expected. Variable Credit: 1-9 credits. May be repeated for up to 9 credits. Required: Student Petition.

**MFG-130** Basic Electricity I  
3 credits, Fall

Explores fundamentals of AC and DC electricity. Includes: atomic structure, direct current, alternating current, Ohm's law, series, parallel, and combination circuits, DC circuit theorems, production of DC voltages, magnetic principles, transformers, motors and generators.

**MFG-131** Basic Electricity II  
3 credits, Winter

Covers application of several theories learned in previous term. Additional topics will include: motors, controls, alignment, pulleys and gears, troubleshooting theory, power distribution and lighting, electrical wiring and schematics.

Recommended Prerequisites: MFG-130 and MTH-050

**MFG-132 Basic Electricity III**

3 credits, Spring

This course offers continued study in the control of industrial electric motors. Concepts in the application of relays, motor starters, switches and overload protection are explored from both a practical and theoretical viewpoint. Wiring techniques and electrical devices for residential, commercial and industrial facilities are presented along with hands-on activities. Additional topics include: electrical conductors, installation materials, and the scope of work performed by licensed electricians.

Recommended Prerequisites: MFG-130 and MFG-131

**MFG-140 Principles of Fluid Power**

3 credits, Winter

Course provides students with instruction in the use of hydraulics and pneumatics in industry, covering the fundamentals of hydraulics, basic components (valves, cylinders, pumps, motors, piping, fluid, fluid conditions, and accessories).

Recommended Prerequisites: MTH-050

**MFG-209 Programming & Automation for Manufacturing**

3 credits, Winter

A high-level computer literacy course for technologists. The focus of this course is on structured computer programming in the Visual Basic language and the application of programming industrial automation. Basic knowledge of the PC required.

Recommended Prerequisites: MFG-109

**MFG-218 Lean Manufacturing and Quality Systems**

3 credits, Fall

This survey course provides students with literacy in the elements of quality systems including Lean Manufacturing/Six Sigma and related statistical methods. Participants will learn about the philosophy and tools that make up a lean manufacturing system. Students will become familiar with the concepts and tools of quality management which include kaizen, visual management, 5S, value stream mapping, A3 problem solving, SPC, Six Sigma, and the Toyota Production System.

**MFG-219 Robotics**

3 credits, Spring

An introduction to robotics and industrial motion control. Students will be exposed to the operation, programming and applications of a typical FANUC, six-axis industrial robot. Hands-on activities will include manual tech programming, testing with simulation software and programming of advanced movements.

Recommended Prerequisites: MFG-209 and MTH-050

**MFG-221 Materials Science**

3 credits, Fall/Winter/Spring

Introduces metallurgy and material science. Extractive and physical metallurgy will be covered. Specific topics include heat treatment, materials analysis, the iron carbon phase diagram, composites, ceramics and industrial plastics.

Recommended Prerequisites: MTH-050

**MFG-264 CMM Set-Up and Operation**

2 credits, Winter

In this last course of the precision measurement sequence, students will learn to properly set-up and operate a Coordinate Measuring Machine (CMM) and design measurement plans for optimal metrology output.

Prerequisites: MFG-104

**MFG-271 Mastercam Mill I**

4 credits, Not Offered Every Term

Covers the creation and manipulation of two and three dimensional wire frame models as well as the creating, editing, and verification of 2-1/2 axis toolpaths. A fundamental understanding of the CAD/CAM process will be gained.

**MFG-272 Mastercam Mill II**

4 credits, Not Offered Every Term

Students construct three-dimensional geometric models using solids and surface modeling techniques. Students program models using advanced multi-axis programming techniques utilizing all aspects of roughing and finishing. Projects verified with solids toolpath verification.

Recommended Prerequisites: MFG-271 or prior experience

**MFG-273 Mastercam, Lathe, Mill, Multi-Axis**

4 credits, Spring

This course covers the fundamentals of Mastercam lathe and mill/turn tool paths. It also provides demonstrations and exercises on new and current programming techniques for advanced mill/turn machining centers. Additional topics will include multi-axis documentation and set-up sheets.

Recommended Prerequisites: MFG-272 or prior experience

**MFG-280 Manufacturing Technology/CWE**

1-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Practical experience in the manufacturing trades. Coordination of instruction will occur with industry and the manufacturing and cooperative work departments. Variable Credit: 1-6 credits. May be repeated for up to 6 credits. Required: Student Petition. Corequisites: CWE-281

## Mathematics (MTH)

**MTH-010 Fundamentals of Arithmetic I**

4 credits, Fall/Winter/Spring/Summer

This first course in arithmetic reviews operations on whole numbers, basic fractions, decimals, measurement, and basic geometry.

**MTH-020 Fundamentals of Arithmetic II**

4 credits, Fall/Winter/Spring/Summer

This second course in arithmetic is a prerequisite for the three math pathways. It reviews mathematical foundations such as fractions, percents, geometry, and effective study skills.

Prerequisites: MTH-010 with a C or better, or placement in MTH-020

**MTH-050 Technical Mathematics I**

4 credits, Fall/Winter/Spring/Summer

Designed for career-technical students. Topics focus on critical thinking, problem solving, and mathematical communication using applications arithmetic, measurement, geometry, and statistics and probability.

Prerequisites: MTH-020 with a C or better, or placement in MTH-050 or higher

**MTH-050ES Matemáticas Técnicas I**

4 credits, Not Offered Every Term

Este curso está diseñado para estudiantes de carreras técnicas. Los temas se centran en el pensamiento crítico, la resolución de problemas y la comunicación matemática utilizando aplicaciones de aritmética, mediciones, geometría, estadística y probabilidades.

Prerequisites: MTH-020 con una C o mejor, o ubicación en MTH-050 o superior



**MTH-060 Algebra I**

4 credits, Fall/Winter/Spring/Summer

Designed for review or for the beginner, this course is an introduction to topics in Algebra. Expressions, equations, inequalities, graphing, and functions are explored.

Prerequisites: MTH-020 with a C or better, or placement in MTH-060

**MTH-065 Algebra II**

4 credits, Fall/Winter/Spring/Summer

The second term of topics in algebra using the rule-of-four approach: graphs, tables, words, and equations. This course emphasizes algebraic skills, as well as problem solving and graphical techniques with the use of a graphing utility.

Prerequisites: MTH-060 with a C or better, or placement in MTH-065

**MTH-080 Technical Mathematics II**

3 credits, Winter/Spring

This course is the second in a sequence designed for career-technical students. The topics focus on critical thinking, problem solving, and mathematical communication using applications in arithmetic, algebra, geometry, and trigonometry.

Prerequisites: MTH-050 with a C or better

**MTH-082A Wastewater Math I**

1 credits, Fall

Quantitative component to understanding wastewater operations. Simple unit conversions, fraction to decimal conversions and more complicated problem solving as applied to wastewater preliminary & primary treatment.

Corequisites: WET-110

**MTH-082B Waterworks Math I**

1 credits, Fall

Problem solving for waterworks applications. Introduction to basic algebra and mathematical concepts, conversions, and calculations encountered in the waterworks industry.

Corequisites: WET-111

**MTH-082C Wastewater Math II**

1 credits, Winter

Quantitative component to understanding analysis and operations of secondary wastewater systems. Flow rate, chemical dosage, treatment plant loading, treatment process efficiency, unit conversion and process control.

Prerequisites: MTH-082A and MTH-082B

Corequisites: WET-120

**MTH-082D Waterworks Math II**

1 credits, Winter

Problem solving for waterworks applications. Introduction to contact-time (CT) calculations, how to determine chemical concentrations, the pounds formula, and basic hydraulics.

Prerequisites: MTH-082A and MTH-082B

Corequisites: WET-121

**MTH-082E Math for High Purity Water**

1 credits, Fall

Basic math for high purity water concepts. Measurement accuracy, rounding rules & errors, significant figures, scientific notation, metric prefixes, simple statistics, average & standard deviation of a population.

Corequisites: WET-125

**MTH-095 Algebra III**

4 credits, Fall/Winter/Spring/Summer

The third term of topics in algebra using the rule-of-four approach is designed to prepare students for transfer-level math courses. This course emphasizes problem-solving and graphical techniques with the use of a graphing utility.

Prerequisites: MTH-065 with a C or better, or placement in MTH-095

**MTH-098 College Math Foundations**

4 credits, Fall/Winter/Spring/Summer

In our society, we see and hear about important topics and trends that involve numbers. In this class, participants work to understand what these numbers mean. Students will use percentages to make comparisons, interpret and construct graphs to describe phenomena, compare ways of describing quantities through unit conversions, explore the ways we use the idea of average, and use rates and ratios to describe how things grow and change. Learning happens in small student groups, using technology, and through writing. The class is project-based, meaning that students complete projects to demonstrate what they've learned.

Prerequisites: MTH-020 with a C or better, or placement in MTH-050, MTH-060, or MTH-098

**MTH-105Z Math in Society**

4 credits, Fall/Winter/Spring/Summer

An exploration of present-day applications of mathematics focused on developing numeracy. Major topics include quantitative reasoning and problem-solving strategies, probability and statistics, and financial mathematics; these topics are to be weighted approximately equally. This course emphasizes mathematical literacy and communication, relevant everyday applications, and the appropriate use of current technology.

Prerequisites: MTH-095 or MTH-098 with a C or better, or placement in MTH-111Z

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MTH-111Z Precalculus I: Functions**

4 credits, Fall/Winter/Spring/Summer

A course primarily designed for students preparing for trigonometry or calculus. This course focuses on functions and their properties, including polynomial, rational, exponential, logarithmic, piecewise-defined, and inverse functions. These topics will be explored symbolically, numerically, and graphically in real-life applications and interpreted in context. This course emphasizes skill building, problem solving, modeling, reasoning, communication, connections with other disciplines, and the appropriate use of present-day technology.

Prerequisites: MTH-095 with a C or better, or placement in MTH-111Z

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MTH-112Z Precalculus II: Trigonometry**

4 credits, Fall/Winter/Spring/Summer

A course primarily designed for students preparing for calculus and related disciplines. This course explores trigonometric functions and their applications as well as the language and measurement of angles, triangles, circles, and vectors. These topics will be explored symbolically, numerically, and graphically in real-life applications and interpreted in context. This course emphasizes skill building, problem solving, modeling, reasoning, communication, connections with other disciplines, and the appropriate use of present-day technology.

Prerequisites: MTH-111Z with a C or better, or placement in MTH-112Z

Recommended Prerequisites: WRD-098 or placement in WR-121Z



**MTH-211** Fundamentals of Elementary Math I

4 credits, Fall

A course designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Focuses on math anxiety and mindset, problem-solving, and arithmetic. MTH-211, 212, and 213 can be taken in any order.

Prerequisites: MTH-095 with a C or better, or placement in MTH-111Z

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MTH-212** Fundamentals of Elementary Math II

4 credits, Winter

A course designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Focuses on fractions, ratios, percents, and algebraic patterns. MTH-211, 212, and 213 can be taken in any order.

Prerequisites: MTH-095 with a C or better, or placement in MTH-111Z

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MTH-213** Fundamentals of Elementary Math III

4 credits, Spring

A course designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Focuses on geometry. MTH-211, 212, and 213 can be taken in any order.

Prerequisites: MTH-095 with a C or better, or placement in MTH-111Z

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MTH-231** Elements of Discrete Mathematics

4 credits, Winter

Students will be introduced to discrete structures and techniques for computing. The course, which is the first in the two-term sequence, aims to convey the skills in discrete mathematics that are used in the study and practice of computer science. Topics include: Sets; Graphs and Trees; Functions: properties, recursive definitions, solving recurrences; Relations: properties, equivalence, partial order; Proof techniques: inductive proof; Counting techniques and discrete probability.

Prerequisites: MTH-251

**MTH-244** Statistics II

4 credits, Fall/Winter/Spring/Summer

The tools learned in Statistics I are purposed for inference of data via the use of hypothesis tests and confidence intervals for both one and two populations, linear regression, and chi-square tests.

Prerequisites: STAT-243Z with a C or better

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MTH-251** Calculus I

5 credits, Fall/Winter/Spring/Summer

For science, engineering, and mathematics students, this is the first course in the four-term Calculus sequence. Focuses on the analysis of functions using limits and differential calculus. Emphasis on applying calculus concepts and techniques to model and solve appropriate real-world applications.

Prerequisites: MTH-112Z with a C or better, or placement in MTH-251

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MTH-252** Calculus II

5 credits, Fall/Winter/Spring/Summer

For science, engineering, and mathematics students, this is the second course in the four-term Calculus sequence. Focuses on understanding integral calculus and using anti-differentiation techniques. Emphasis on applying the calculus to model and solve appropriate real-world applications.

Prerequisites: MTH-251 with a C or better

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MTH-253** Calculus III

5 credits, Fall/Winter/Spring/Summer

Investigates indeterminate forms, improper integrals, convergence of sequences and series, power series, Taylor series and Taylor polynomials, error analysis of numerical estimates, complex numbers and the Euler formula, parametric equations, vectors, dot products, and the geometry of lines and planes in space.

Prerequisites: MTH-252 with a C or better

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MTH-254** Vector Calculus

5 credits, Summer/Fall/Spring

This course is an introduction to the study of vectors and analytic geometry in three-space, the calculus of vector-valued functions, and the calculus of several variables.

Prerequisites: MTH-252 with a C or better

**MTH-256** Differential Equations

4 credits, Summer/Winter

This course is an introduction to the study of first-order differential equations, first-order systems of differential equations, linear systems of differential equations, and applications of these topics.

Prerequisites: MTH-252 with a C or better

**MTH-261** Linear Algebra

4 credits, Summer/Fall/Spring

This course is an introduction to linear analysis of n-space: systems of linear equations, vectors, matrices, matrix operations, linear transformations, linear independence, span, bases, subspaces, determinants, eigenvalues, eigenvectors, inner products, diagonalization, and applications of these topics.

Prerequisites: MTH-252 with a C or better

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MTH-275** A Bridge to University Mathematics

3 credits, Not Offered Every Term

This is a bridge course designed to help students transition from computation-based mathematics to the more proof-based curriculum typical of junior and senior collegiate-level mathematics courses. Students will construct and validate proofs, explore the nature of mathematics, and navigate some of the systems and conventions used within the mathematics community. May be repeated for up to 6 credits.

Prerequisites: MTH-251

## Medical Assistant (MA)

**MA-100** Introduction to Medical Assisting

2 credits, Summer

Introduces the knowledge, skills, and attributes of a successful Medical Assistant while exploring the connection between patient experience and patient outcomes. Summarizes the clinical and employability skills required for providing clinical care while introducing content for career exploration.

**MA-110 Medical Terminology**

4 credits, Fall/Winter/Spring/Summer

This course provides the foundational principles required for understanding medical terms used to communicate effectively within the healthcare field. This includes word meaning and discerning the difference between look-alike and sound-alike words through correct spelling and pronunciation. Students will develop the ability to read and comprehend the content of medical records and reports. Through the review of body systems this course includes introductions to disease processes, basic anatomy and physiology and associated terminology. This course is required prerequisite for Medical Assistant and Clinical Laboratory Assistant students.

**MA-135 Communications and Ethical Practices in Healthcare Settings**

3 credits, Winter

This course will introduce students to a variety of communication styles, situational coping skills, and legal and ethical skills necessary for patient interactions in a front office/receptionist entry-level position. Also covered is utilizing an Electronic Health Record computer system to complete front desk tasks, such as written communication, registering, and scheduling patients.

**MA-150 Medical Office Practices**

4 credits, Fall

Focuses on administrative skills performed by the Medical Assistant in the ambulatory care setting. The course examines medical law and ethics, bioethics, communication, principles of confidentiality, critical thinking, diversity, and medical office function.

Required: Student must be enrolled in current Medical Assistant cohort  
Prerequisites: MA-110.

MTH-050 or MTH-065. WR-101 or WR-121Z

Prerequisites: BI-120, or BI-101 &amp; BI-102, or BI-231 &amp; BI-232 &amp; BI-233

Recommended Prerequisites: MA-100 and PSY-101

Corequisites: MA-152, MA-152L, MA-154, and MA-158

**MA-152 Examination Room Techniques I**

3 credits, Fall

This course is designed to introduce students to the fundamental skills required for medical assisting in an exam room setting. The course will focus on the basic skills needed for patient interactions, documentation, and vital signs.

Required: Student must be enrolled in current Medical Assistant cohort  
Prerequisites: MA-110.

MTH-050 or MTH-065. WR-101 or WR-121Z

Prerequisites: BI-120, or BI-101 &amp; BI-102, or BI-231 &amp; BI-232 &amp; BI-233

Recommended Prerequisites: MA-100 and PSY-101

Corequisites: MA-150, MA-152L, MA-154, and MA-158

**MA-152L Examination Room Techniques I Lab**

1 credits, Fall

This lab is designed to apply the hands-on skills that were introduced to students in the lecture class. This lab will cover hands-on skills required for medical assisting in an exam room setting. The lab will focus on the basic skills needed for patient interactions, documentation, and vital signs.

Required: Student must be enrolled in current Medical Assistant cohort  
Prerequisites: MA-110.

MTH-050 or MTH-065. WR-101 or WR-121Z

Prerequisites: BI-120, or BI-101 &amp; BI-102, or BI-231 &amp; BI-232 &amp; BI-233

Recommended Prerequisites: MA-100 and PSY-101

Corequisites: MA-150, MA-152, MA-154, and MA-158

**MA-154 Body Systems and Pharmacology**

4 credits, Fall

Introduces the medical assistant student to the foundational concepts and principles of pharmacology; including the classifications of common medications including indications for use, desired effect, side effect, adverse effects, and patient education. Related pathophysiology and body systems will be discussed and reviewed.

Required: Student must be enrolled in current Medical Assistant cohort  
Prerequisites: MA-110.

MTH-050 or MTH-065

Prerequisites: BI-120, or BI-101 &amp; BI-102, or BI-231 &amp; BI-232 &amp; BI-233

Recommended Prerequisites: MA-100 and PSY-101

Corequisites: MA-150, MA-152, MA-152L, and MA-158

**MA-156 Phlebotomy I**

1 credits, Winter

This course is designed to introduce students to the fundamental skills required for phlebotomy as a medical assistant. Students will become familiar with phlebotomy equipment and learn about basic blood collection procedures. The course will focus on the basic skills needed for patient interactions, documentation, and various phlebotomy techniques.

Required: Student must be enrolled in current Medical Assistant cohort  
Prerequisites: MA-150, MA-152, MA-152L, MA-154, and MA-158

Corequisites: MA-156L, MA-160, MA-162, MA-162L, MA-164, MA-164L, and MA-168

**MA-156L Phlebotomy I Lab**

1 credits, Winter

This lab is designed to apply the hands-on skills that were introduced to students in the lecture class. This lab is designed to introduce students to the fundamental skills required for phlebotomy as a medical assistant. Students will become familiar with phlebotomy equipment and learn about basic blood collection procedures. The course will focus on the basic skills needed for patient interactions, documentation, capillary punctures and various phlebotomy techniques.

Required: Student must be enrolled in current Medical Assistant cohort  
Prerequisites: MA-150, MA-152, MA-152L, MA-154, and MA-158

Corequisites: MA-156, MA-160, MA-162, MA-162L, MA-164, MA-164L, and MA-168

**MA-158 Seminar I**

2 credits, Fall

This course introduces professionalism in the healthcare setting and explores clinical placement opportunities. Students will demonstrate compliance with Oregon Health Authorities rules for students in clinical training and obtain volunteer experience with a community partner.

Required: Student must be enrolled in current Medical Assistant cohort  
Prerequisites: MA-110.

MTH-050 or MTH-065. WR-101 or WR-121Z

Prerequisites: BI-120, or BI-101 &amp; BI-102, or BI-231 &amp; BI-232 &amp; BI-233

Recommended Prerequisites: MA-100 and PSY-101

Corequisites: MA-150, MA-152, MA-152L, and MA-154

**MA-160 Insurance & Health Information Management**

3 credits, Winter

This course introduces medical assisting students to practical applications for billing medical insurance both manually and electronically. The course is designed to instruct the student in all phases of billing and insurance procedures and entry-level Electronic Health Record software for the management of medical records. The students are also introduced to basic ICD-10 Diagnosis and Procedural coding skills. This course is required for medical assistant students. This course does not meet the requirements for Insurance Coder certification.

Required: Student must be enrolled in current Medical Assistant cohort

Prerequisites: MA-150, MA-152, MA-152L, MA-154, and MA-158

Corequisites: MA-156, MA-156L, MA-162, MA-162L, MA-164, MA-164L, and MA-168

**MA-162 Examination Room Techniques II**

3 credits, Winter

This course builds upon the foundational skills introduced in Examination Room Techniques I. The course will focus on advanced medical assisting skills such as medication administration, patient care interactions, immunization, special exam procedures, EKGs, and assisting providers. This course will incorporate specialty clinics and advanced procedures.

Required: Student must be enrolled in current Medical Assistant cohort

Prerequisites: MA-150, MA-152, MA-152L, MA-154, and MA-158

Corequisites: MA-156, MA-156L, MA-160, MA-162L, MA-164, MA-164L, and MA-168

**MA-162L Examination Room Techniques Lab II**

1 credits, Winter

This lab is designed to apply the hands-on skills that were introduced to students in the lecture class. This lab will cover hands-on skills required for medical assisting in an exam room by adding advanced procedures to the basic rooming techniques. The lab will include advanced medical assisting skills such as medication administration, patient care interactions, immunization, special exam procedures, EKGs, and assisting providers. This lab will incorporate specialty clinics and advanced procedures.

Required: Student must be enrolled in current Medical Assistant cohort

Prerequisites: MA-150, MA-152, MA-152L, MA-154, and MA-158

Corequisites: MA-156, MA-156L, MA-160, MA-162, MA-164, MA-164L, and MA-168

**MA-164 Clinical Lab Procedures I**

1 credits, Winter

This theory course is designed to instill a basic understanding of common laboratory terminology and procedures used in a general medical office laboratory to aid the physician in the diagnosis and treatment of disease. Laboratory safety, the prevention of bloodborne disease transmission and scope of practice will be emphasized. First course in the Clinical Laboratory Procedures series.

Required: Student must be enrolled in current Medical Assistant cohort

Prerequisites: MA-150, MA-152, MA-152L, MA-154, and MA-158

Corequisites: MA-156, MA-156L, MA-160, MA-162, MA-162L, MA-164L, and MA-168

**MA-164L Clinical Lab Procedures I Lab**

1 credits, Winter

This laboratory course is designed to instill a basic understanding of common laboratory terminology and procedures used in a general medical office laboratory to aid the physician in the diagnosis and treatment of disease. Laboratory safety, the prevention of bloodborne disease transmission and scope of practice will be emphasized. This is the first lab course in the Clinical Laboratory Procedures series.

Required: Student must be enrolled in current Medical Assistant cohort

Prerequisites: MA-150, MA-152, MA-152L, MA-154, and MA-158

Corequisites: MA-156, MA-156L, MA-160, MA-162, MA-162L, MA-164, and MA-168

**MA-166 Phlebotomy II**

1 credits, Spring

The focus of this course builds upon the foundational skills introduced in Phlebotomy I. The course will focus on advanced phlebotomy techniques such as blood specimen processing, techniques for syringe draws, collection into the correct evacuated tube (additive), specimen handling procedures, collections of newborn screen blood cultures, and advanced phlebotomy techniques.

Required: Student must be enrolled in current Medical Assistant cohort

Prerequisites: MA-156, MA-156L, MA-160, MA-162, MA-162L, MA-164, MA-164L, and MA-168

Corequisites: MA-166L, MA-174, MA-174L, MA-178, and MA-188

**MA-166L Phlebotomy II Lab**

1 credits, Spring

The focus of this course is to demonstrate appropriate blood specimen procurement techniques using vacutainer, syringe, 'winged infusion'/ butterfly with syringe and capillary puncture methods and associated safety techniques. Other specifics of the blood specimen testing requirements, such as collection into the correct evacuated tube (additive), specimen handling procedures, collections of newborn screen and collection documentation are also covered; while assuring a safe, confidential and professional environment for the patient, and as the phlebotomy technician.

Required: Student must be enrolled in current Medical Assistant cohort

Prerequisites: MA-156, MA-156L, MA-160, MA-162, MA-162L, MA-164, MA-164L, and MA-168

Corequisites: MA-166, MA-174, MA-174L, MA-178, and MA-188

**MA-168 Seminar II**

2 credits, Winter

This course will expand on professionalism within the healthcare setting and students will interview and obtain clinical practicum placement.

Required: Student must be enrolled in current Medical Assistant cohort

Prerequisites: MA-150, MA-152, MA-152L, MA-154, and MA-158

Corequisites: MA-156, MA-156L, MA-160, MA-162, MA-162L, MA-164, and MA-164L

**MA-174 Clinical Lab Procedures II**

1 credits, Spring

Designed to instill a basic understanding of simple, common laboratory terminology and procedures used in a general medical office laboratory to aid the physician in the diagnosis and treatment of disease. Laboratory safety, the prevention of blood born disease transmission and scope of practice will be emphasized. Continuation of the Clinical Laboratory Procedures series.

Required: Student must be enrolled in current Medical Assistant cohort

Prerequisites: MA-156, MA-156L, MA-160, MA-162, MA-162L, MA-164, MA-164L, and MA-168

Corequisites: MA-166, MA-166L, MA-174L, MA-178, and MA-188

**MA-174L** Clinical Lab Procedures II Lab

1 credits, Spring

This lab course is designed to instill a basic understanding of common laboratory terminology and procedures used in a general medical office laboratory to aid the physician in the diagnosis and treatment of the disease. Laboratory safety, the prevention of bloodborne disease transmission and scope of practice will be emphasized. Continuation of the Clinical Laboratory Procedures series.

Required: Student must be enrolled in current Medical Assistant cohort

Prerequisites: MA-156, MA-156L, MA-160, MA-162, MA-162L, MA-164, MA-164L, and MA-168

Corequisites: MA-166, MA-166L, MA-174, MA-178, and MA-188

**MA-178** Medical Assistant Practicum

9 credits, Spring

Under supervision within the ambulatory care setting, the student will apply both administrative and clinical knowledge and practices as attained within the medical assistant course curriculum.

Required: Student must be enrolled in current Medical Assistant cohort

Prerequisites: MA-156, MA-156L, MA-160, MA-162, MA-162L, MA-164, MA-164L, and MA-168

Corequisites: MA-166, MA-166L, MA-174, MA-174L, and MA-188

**MA-188** Certification Exam Review

2 credits, Spring

This course is a medical assistant study prep course designed to prepare students for their national credentialing examination.

Required: Student must be enrolled in current Medical Assistant cohort

Prerequisites: MA-156, MA-156L, MA-160, MA-162, MA-162L, MA-164, MA-164L, and MA-168

Corequisites: MA-166, MA-166L, MA-174, MA-174L, and MA-178

## Medical Billing and Coding (MBC)

**MBC-115** Insurance Billing and Reimbursement I

4 credits, Winter

First course of a two part series. This course introduces the student to health insurance, insurance billing and reimbursement. Students will study the health insurance industry, legal and regulatory issues, and differences in reimbursement methods. The principles of medical billing will be covered, including proper claim form preparation. Required: Student Petition.

Required: Medical Billing and Coding students only

**MBC-116** Insurance Billing and Reimbursement II

4 credits, Spring

This course will continue to discuss health insurance and insurance billing, with a focus on healthcare reimbursement. Students will practice the principles of accounts receivable management from claim submission and follow-up to posting payments received. Students will apply payments to patient accounts and track claims for correct payment. Legal and regulatory issues as they pertain to healthcare reimbursement are reviewed as well as the differences in reimbursement methods. Practical application of Insurance billing and Medical coding skills learned throughout the program via examinations and practice scenarios. Required: Student Petition.

Required: Medical Billing and Coding students only

Prerequisites: MBC-115 with a C or better

**MBC-120** Introduction to Medical Coding

3 credits, Winter

This course will explore the fundamental medical coding skills for professional services, such as physicians, mid-level providers, etc. Students will investigate the fundamentals of Diagnostic and Procedural medical coding. Required: Student Petition.

Required: Medical Billing and Coding students only

**MBC-125** ICD-10 Coding I

2 credits, Spring

This course will discuss fundamental medical coding skills for professional services, such as physicians, mid-level providers, etc., and how to apply them. The student will be introduced to the basics of diagnostic medical coding related to the International Classification of Diseases, Revision 10-Clinical Modification (ICD-10- CM) Code Set.

Required: Student Petition.

Required: Medical Billing and Coding students only

Prerequisites: MBC-120 with a C or better

Corequisites: MBC-126

**MBC-126** CPT/HCPCS Coding I

4 credits, Spring

This course reviews fundamental medical coding skills for professional services, such as physicians, mid-level providers, etc. The student will explore the basics of procedural medical coding related to the Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Code Sets. Required: Student Petition.

Required: Medical Billing and Coding students only

Prerequisites: MBC-120 with a C or better

Corequisites: MBC-125

**MBC-135** Law and Ethics for Healthcare Professions

3 credits, Winter

This course introduces legislation affecting healthcare, along with a review of issues such as professional liability, informed consent, privacy and security laws, electronic health records and workplace legalities.

A variety of ethical issues in health care are explored, as well as an examination of future trends in health care. Required: Student Petition.

Required: Medical Billing and Coding students only

**MBC-225** ICD-10, CPT and HCPCS Coding II

5 credits, Summer

This course will demonstrate fundamental medical coding skills for professional services, such as physicians, mid-level providers, etc.

Students will explore the basics of diagnostic and procedural medical coding related to the International Classification of Diseases, Revision 10-Clinical Modification (ICD-10 CM), Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Code Sets.

Required: Student Petition.

Required: Medical Billing and Coding students only

Prerequisites: MBC-120, MBC-125, and MBC-126 with a C or better

## Music (MUS)

**MUS-090** Preparation for Music Theory

2 credits, Summer

This course familiarizes students with terminology and building blocks used in Music Theory. Students who have played in ensembles or sang in choirs, but have not had a formal music theory program before, will find that this course prepares them to succeed in the Music Theory sequence (MUS-111-113).

**MUS-101 Music Fundamentals**

3 credits, Fall/Winter/Spring

Introduction to fundamentals of reading and writing music. Designed for non-majors or majors needing substantial preparation for Music Theory I.

**MUS-102 Music Fundamentals**

3 credits, Winter/Spring

Continues an introduction to fundamentals of reading and writing music. Designed for non-majors or majors needing substantial preparation for Music Theory I.

Prerequisites: MUS-101

**MUS-103 Music Fundamentals**

3 credits, Spring

Continuance of an introduction to fundamentals of reading and writing music. Designed for non-majors or majors needing substantial preparation for Music Theory I.

Prerequisites: MUS-102

**MUS-105 Music Appreciation**

3 credits, Fall/Winter/Spring

For non-majors and music majors. Emphasis on engaging in the study of instrumental and vocal musical genres from the ancient period through the contemporary music of our time. Includes critical analysis, study of elements, forms, styles, composers, performers, cultural, and historical issues and events.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MUS-106 Audio Recording At Home**

1 credits, Fall/Winter/Spring

An overview of the basic tools and techniques used in audio recording at home. Depending on participant needs, topics may include signal path, microphone applications, software, hardware, outboard gear, soldering techniques, tracking, mixing, and editing.

**MUS-107 Introduction to Audio Recording I**

3 credits, Fall/Winter/Spring/Summer

Introduction to the basic techniques and tools used in audio recording.

Areas of study include signal path, microphone applications, software, hardware, outboard gear, tracking, mixing, and editing.

**MUS-108 Introduction to Audio Recording II**

3 credits, Fall/Winter/Spring

Exploration of techniques and tools used in audio recording. Analog, digital, and hard drive recording will be explored. Areas of study include multi-tracking, signal path, microphone applications, software, hardware, outboard gear, soldering techniques, tracking, mixing, and editing.

Software/hardware includes ProTools, ADAT, Mackie, etc.

Prerequisites: MUS-107

**MUS-109 Introduction to Audio Recording III**

3 credits, Fall/Winter/Spring

Exploration of digital recording/editing software and production of CD project. Advanced exploration of techniques and tools used in audio recording. Areas of study include signal path, microphone applications, software, hardware, outboard gear, tracking, mixing, and editing. Analog, digital, and hard drive recording will be explored. Software/hardware includes ProTools, ADAT, Mackie, etc.

Prerequisites: MUS-108

**MUS-111 Music Theory I**

3 credits, Fall

For non-majors and music majors. Presents an introduction to the diatonic and chromatic structure of tonal music from the common practice period through written exercises, listening, and analysis. This is the first term of a three-term sequence, which includes concepts of pitch and rhythm, intervals, keys, scales, triads, dominant seventh chord, and standard cadences. Provides a thorough groundwork in the melodic, harmonic, and rhythmic elements of music.

Recommended Prerequisites: MTH-095 or placement in MTH-111Z; WRD-098 or placement in WR-121Z

Corequisites: First year music majors must take MUS-111 concurrently with MUS-111L, MUS-114, and MUS-127. This requirement does not affect non-music majors

**MUS-111L Music Notation Software I**

1 credits, Fall

Introduces students to Finale (music notation software) on Macintosh computers.

Required: Required for first-year music majors

**MUS-112 Music Theory I**

3 credits, Winter

For non-majors and music majors. Presents functional harmony through written exercises, listening, and analysis. This is the second term of a three-term sequence, which includes voice leading, nonharmonic tones, three-voice and four-voice chorale writing, figured bass, and small melodic structures. Provides a thorough groundwork in the melodic, harmonic, and rhythmic elements of music.

Prerequisites: MUS-111

Corequisites: MUS-112L, MUS-115, and MUS-128. Not required for non-music majors

**MUS-112L Music Notation Software I**

1 credits, Winter

Continues an introduction to Finale (music notation software) on Macintosh computers.

Required: Required for first-year music majors

**MUS-113 Music Theory I**

3 credits, Spring

For non-majors and music majors. Presents the diatonic and chromatic structure of tonal music in theory from the common practice period through written exercises, compositions, listening, and analysis.

This is the third term of a three-term sequence, which includes chord progressions, use of triad inversions, seventh chords, secondary harmony, tonicization, and modulation to closely related keys.

Required: First year music majors must take MUS-113 concurrently with MUS-113L, MUS-116, and MUS-129.

This requirement does not affect non-music majors

Prerequisites: MUS-112

**MUS-113L Music Notation Software I**

1 credits, Spring

Continues an introduction to Finale (music notation software) on Macintosh computers.

Required: Required for first-year music majors

**MUS-114 Aural Skills I**

2 credits, Fall

First course in a year-long sequence. Diatonic sight singing in major keys using solfège syllables and moveable 'do'. Melodic dictation and aural recognition of intervals and triads.

Required: Required for first-year music majors

Corequisites: MUS-111



**MUS-115** Aural Skills I

2 credits, Winter

Second of three courses in a year-long sequence. Diatonic sight singing in major keys using solfège syllables and moveable 'do'. Melodic dictation and aural recognition of intervals, triads, and 7th chords.

Required: Required for first-year music majors

Prerequisites: MUS-114

Corequisites: MUS-112

**MUS-116** Aural Skills I

2 credits, Spring

Third of three courses in a year-long sequence. Diatonic sight singing in major keys using solfège syllables and moveable 'do'. Melodic dictation and aural recognition of intervals, triads, and 7th chords.

Required: Required for first-year music majors

Prerequisites: MUS-115

Corequisites: MUS-113

**MUS-127** Keyboard Skills I

2 credits, Fall

Develops basic keyboard skills required for study of tonal harmony and various musical activities such as vocal and instrumental rehearsals, music education and composition.

Required: Required for music majors

Recommended: Some experience in reading treble and bass clef, or MUS-131, MUS-132, or MUS-133 with a C or better

Corequisites: MUS-111, MUS-111L, MUS-114

**MUS-128** Keyboard Skills I

2 credits, Winter

Develops basic keyboard skills required for study of tonal harmony and various musical activities such as vocal and instrumental rehearsals, music education and composition.

Required: Required for music majors

Prerequisites: MUS-127

Corequisites: MUS-112, MUS-112L, and MUS-115

**MUS-129** Keyboard Skills I

2 credits, Spring

Develops basic keyboard skills required for study of tonal harmony and various musical activities such as vocal and instrumental rehearsals, music education and composition.

Required: Required for music majors

Prerequisites: MUS-128

Corequisites: MUS-113, MUS-113L, and MUS-116

**MUS-131** Group Piano: Piano for Pleasure

1 credits, Fall

First of three courses in a year-long sequence. Beginning classroom piano instruction for non-music majors. Includes reading, theory, technical exercises, and the opportunity to share your music with others. Beginning to intermediate level.

**MUS-132** Group Piano: Piano for Pleasure

1 credits, Winter

Second of three courses in a year-long sequence. Beginning classroom piano instruction for non-music majors. Includes reading, theory, technical exercises, and the opportunity to share your music with others. Beginning to intermediate level.

**MUS-133** Group Piano: Piano for Pleasure

1 credits, Spring

Third of three courses in a year-long sequence. Beginning classroom piano instruction for non-music majors. Includes reading, theory, technical exercises, and the opportunity to share your music with others. Beginning to intermediate level.

**MUS-134** Group Voice: Anyone Can Sing

1 credits, Fall

Basic vocal techniques for the solo and ensemble singer. For music and non-music majors, voice and music education majors, and/or students who received a low rating on MUP-174 audition.

**MUS-135** Group Voice: Anyone Can Sing

1 credits, Winter

Vocal techniques for the solo and ensemble singer. For music and non-music majors, voice and music education majors, and/or students who received a low rating on MUP-174 audition.

**MUS-136** Group Voice: Anyone Can Sing

1 credits, Spring

Vocal techniques for the solo and ensemble singer. For music and non-music majors, voice and music education majors, and/or students who received a low rating on MUP-174 audition.

**MUS-137** Group Guitar I

1 credits, Fall/Winter/Spring

For beginning to intermediate players. Covers finger picking, lead guitar, rock and popular styles, music reading, and music theory. Students provide own instrument.

**MUS-138** Group Guitar II

1 credits, Winter/Spring

For intermediate to advanced players. Covers finger picking, lead guitar, rock and popular styles, music reading, and music theory. Students provide their own instrument.

Prerequisites: MUS-137

**MUS-140** Careers in Music

3 credits, Winter

An overview of the music industry career opportunities. Studies include recording studio management/engineering, music merchandising, promotion, music contracting, agent/personal manager, live performing, teaching, technical support, record business, video and film production/editing, retailing, and instrument repair.

Required: Required for the Music Technology certificate

**MUS-141** Introduction to the Music Business

3 credits, Fall

Explores business basics, songwriting, demos, agents, managers, copyrights, gig and concert promotion, publishing, licensing, and music business structures.

**MUS-142** Introduction to Electronic Music I: MIDI

3 credits, Fall/Winter/Spring

Introduction to synthesis, MIDI sequencing, basic musical elements, and the basics of production. Learn how to make beats, songs, etc. Uses common production software/hardware.

**MUS-143** Introduction to Electronic Music II: Sequencing, Audio Looping, Sound EFX

3 credits, Fall/Winter/Spring

An introduction to digital audio in the MIDI environment. This course continues MIDI sequencing, and integrates audio into the MIDI environment with audio looping, and spotting sound effects. Uses common production software/hardware.

Prerequisites: MUS-142

**MUS-144** Introduction to Electronic Music III: Digital Audio  
3 credits, Fall/Winter/Spring  
Exploration of digital music recording and editing, synthesis, sampling, and sequencing. Presents CD/audio file production techniques integrating digital audio with the MIDI sequence. Uses Pro Tools, and other common production software/hardware.  
Prerequisites: MUS-143

**MUS-145** Introduction to Digital Sound, Video & Animation  
3 credits, Winter/Spring  
An introduction to new media. Includes sound, video, animation, mp3, DVD, and compression technology.

**MUS-147** Music, Sound & Moviemaking  
1 credits, Fall/Winter/Spring  
Presents the basic components of designing, shooting, recording audio, and post production of movies as well as the history and theory that has led to contemporary film production.

**MUS-148** Live Sound Engineering  
3 credits, Fall/Spring  
Introduction to the basic techniques and tools used in live sound engineering and mixing. Areas of study include set up, signal path, microphone applications, hardware, and outboard gear.

**MUS-149** Advanced Pro Tools Editing Techniques  
1 credits, Not Offered Every Term  
Additional advanced training in Pro Tools audio software techniques. The student will learn techniques in audio editing using warp audio, Beat Detective, and other plug-ins not covered in the MUS-107 through MUS-109 series.  
Prerequisites: MUS-107 or MUS-143 or equivalent

**MUS-160** Songwriting I  
2 credits, Winter  
Studies the techniques of a working songwriter, including use of form, lyrics, harmonic progressions and symbolism in the creative aspect of songwriting. Solo writing as well as the concept of collaboration are introduced. Participants will work individually and/or in small groups to record original songs. May be repeated for up to 4 credits.  
Required: Working proficiency at playing an instrument such as piano, guitar, voice, or equivalent. Computer generated music is also acceptable

**MUS-161** Songwriting II  
2 credits, Spring  
Songwriting II is a continuation of MUS-160. Further explores the elements of songwriting, focuses on creating a digital composition portfolio and public performance.

**MUS-170** Introduction to Scoring Music for Media  
2 credits, Spring  
Introduction to the analysis, writing, and production of basic film, video, and/or video game music scores and spotting music cues.  
Prerequisites: MUS-102 or MUS-112 or MUS-143

**MUS-171** Sound Design  
2 credits, Winter  
This course introduces students to the fundamentals of sound design through a series of practical, hands-on activities. Students will gain an understanding of the skills, tools, and concepts used in the creation and synchronization of sound effects in modern visual media. Through a thorough introduction to sound recording, editing and mixing, audio manipulation, and electronic synthesis, this course will provide students with the knowledge and skills to create unique sound effects using industry standard software like Pro Tools, Propellerhead's Reason, Ableton Live, Native Instrument's Reaktor, and other sound design-specific software.

**MUS-189** Performance & Repertoire  
1 credits, Fall/Winter/Spring  
A performance forum required for all students studying a classical instrument or voice at the MUP 171-191 and MUP 271-291 levels. Through weekly performance and critique, each student will develop proper stage manners and prepare for the end of term performance jury, and will also study the work to be performed through academic research. Students will have an opportunity to work with a professional accompanist. May be repeated for up to 6 credits.

**MUS-205** Music Literature: History of Jazz  
4 credits, Not Offered Every Term  
For non-majors and music majors. Emphasis on engaging in the study of Jazz music and surrounding cultural/historical issues. Includes critical analysis, study of elements, forms, styles, composers, performers, cultural, and historical issues and events.  
Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MUS-206** Music Literature: History of Rock  
4 credits, Fall/Winter/Spring  
For non-majors and music majors. Emphasis on engaging in the study of Rock music and surrounding cultural/historical issues. Includes critical analysis, study of elements, forms, styles, composers, performers, cultural, and historical issues and events. An examination of Rock music as a contemporary social medium.  
Recommended Prerequisites: WRD-098 or placement in WR-121Z

**MUS-207** Advanced Recording Techniques: Drums  
1 credits, Not Offered Every Term  
Advanced training for recording drum kits and various hand percussion instruments.  
Prerequisites: MUS-107

**MUS-211** Music Theory II  
3 credits, Fall  
For non-majors and music majors. Continuation of the study of functional harmony through written exercises, compositions, listening, and analysis and introduction to polyphony. This is the first term of a three-term sequence, which includes late Renaissance polyphony, baroque counterpoint, and chromatic harmony.  
Prerequisites: MUS-113  
Corequisites: MUS-214 and MUS-224

**MUS-212 Music Theory II**

3 credits, Winter

For non-majors and music majors. Continuation of the study of harmony and period styles through written exercises, compositions, listening, and analysis. This is the second term of a three-term sequence, which includes the classical style, extended, and chromatic harmony.

Required: Ability to read music.

Required for Music Majors

Prerequisites: MUS-211

Corequisites: MUS-215 and MUS-225

**MUS-213 Music Theory II**

3 credits, Spring

For non-majors and music majors. Continuation of the study of harmony, period styles after the 18th century through written exercises, compositions, listening, and analysis. This is the third term of a three-term sequence, which includes the 19th and 20th century idioms such as Romanticism, impressionism, post-Romanticism, and serialism.

Prerequisites: MUS-212

Corequisites: MUS-216 and MUS-226

**MUS-214 Keyboard Skills II**

2 credits, Fall

Advanced keyboard applications of the materials of diatonic and chromatic music.

Required: Required for second-year music majors

Prerequisites: MUS-129

Corequisites: MUS-211

**MUS-215 Keyboard Skills II**

2 credits, Winter

Second course in the sequential second year of advanced keyboard applications covering the materials of diatonic and chromatic music.

Required: Required for second-year music majors

Prerequisites: MUS-214

Corequisites: MUS-212

**MUS-216 Keyboard Skills II**

2 credits, Spring

Third course in the sequential second year of advanced keyboard applications covering the materials of diatonic and chromatic music.

Required: Required for second-year music majors

Prerequisites: MUS-215

Corequisites: MUS-213

**MUS-218 MPT Seminar I**

1 credits, Fall

First of a three-part series. For second year MPT students only. Seminar will cover writing, arranging, production, performance and music theory through experiential learning. Students will produce, write and arrange for each CWE/Songwriters concert and will produce the Annual MPT festival each spring.

Required: Must be a 2nd year MPT student in good standing

Prerequisites: MUS-103, MUS-109, MUS-113L, and MUP-150

**MUS-219 MPT Seminar II**

1 credits, Winter

Second in a three-part series. For second year MPT students only. Seminar will cover writing, arranging, production, performance and music theory through experiential learning. Students will produce, write and arrange for each CWE/Songwriters concert and will produce the Annual MPT festival each spring.

Prerequisites: MUS-218

**MUS-220 MPT Seminar III**

1 credits, Spring

Third in a three-part series. For second year MPT students only. Seminar will cover writing, arranging, production, performance and music theory through experiential learning. Students will produce, write and arrange for each CWE/Songwriters concert and will produce the Annual MPT festival each spring.

Prerequisites: MUS-219

**MUS-224 Aural Skills II**

2 credits, Fall

First of three courses in a year-long sequence. Diatonic and chromatic sight singing with solfège syllables and moveable 'do'. Four-part dictation including all chromatic devices studied in Theory II.

Required: Required for second-year music majors

Prerequisites: MUS-116

Corequisites: MUS-211

**MUS-225 Aural Skills II**

2 credits, Winter

Second of three courses in a year-long sequence. Diatonic and chromatic sight singing with solfège syllables and moveable 'do'. Four-part dictation including all chromatic devices studied in Theory II.

Required: Required for second-year music majors

Prerequisites: MUS-224

Corequisites: MUS-212

**MUS-226 Aural Skills II**

2 credits, Spring

Third of three courses in a year-long sequence. Diatonic and chromatic sight singing with solfège syllables and moveable 'do'. Four-part dictation including all chromatic devices studied in Theory II.

Required: Required for second-year music majors

Prerequisites: MUS-225

Corequisites: MUS-213

**MUS-230 Music and Media: Sex, Drugs, Rock & Roll**

4 credits, Fall/Winter/Spring

Explores history and development of the pop music, pop culture and media industries in America.

**MUS-242 Music Creation with Ableton LIVE**

1 credits, Not Offered Every Term

This course enables the student to use Ableton LIVE software to create music.

**MUS-247 Sound for Media**

3 credits, Fall/Spring

Introduction to sound as related to film making, animation, and video games. Students will have the opportunity to create and assemble sound for media into a finished product. Explores the basic components of commercial film/video, animation, and game production as they relate to sound.

Recommended: Experience using a DAW (Digital Audio Workstation) or video editing software

**MUS-280 Music/CWE**

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job work experience in the field of music. Variable Credit: 2-6 credits. Required: Student Petition.

Prerequisites: MUS-107, MUS-140, and MUS-142

Corequisites: CWE-281

## Music Performance (MUP)

### **MUP-100** Individual Lessons: Non-Music Majors

1 credits, Fall/Winter/Spring/Summer

Private lessons for beginners, non-music majors, and students who receive a low rating in MUP-171-191 auditions. Brass, woodwind, percussion, string and keyboard instruments, and voice. May be repeated for up to 6 credits. Required: Student Petition.

### **MUP-102** Wind Ensemble

2 credits, Fall/Winter/Spring

For non-majors and music majors. Introduction and study of traditional and contemporary band literature. This course is taken each term in one's first year of a two-year course of study that includes performance, study of common styles and practices of historically and culturally significant composers/arrangers, and study of historical issues related to the development and performance of band literature. Provides a thorough groundwork in the fundamental ideas, techniques, and practices of band music and ensemble performance. No audition required. May be repeated for up to 6 credits.

Required: Completion of high school or high school performance level.

Ability to read music and play a band instrument

### **MUP-104** Pep Band/Combo-Impro

1 credits, Fall/Winter/Spring

Instrumental performing group concentrating on rock, pop, and contemporary styles in the small to medium-sized group setting. No audition required. May be repeated for up to 8 credits.

Recommended Prerequisites: MUP-105 or MUP-125

### **MUP-105** Jazz Ensemble

2 credits, Fall/Winter/Spring

For non-majors and music majors. Introduction and study of common 'big-band' and small-group jazz styles. This course is taken each term in one's first year of a two-year course of study that includes performance, improvisation, musical arranging and writing, study of common styles and practices of historically and culturally significant jazz artists, and study of historical issues related to the development and performance of jazz music. May be repeated for up to 6 credits.

Recommended Prerequisites: MUP-102

### **MUP-122** Chamber Choir

2 credits, Fall/Winter/Spring

Select vocal ensemble which rehearses and performs choral music from the Renaissance to the 21st century. Provides preparation for entering professional fields of music and performance. Emphasis on a cappella singing applied to appropriate chamber music. Recommended for vocal music majors. Enrollment by audition. May be repeated for up to 6 credits.

Recommended: A desire to sing in a large and fun ensemble. An interest in exploring the roots of American music

### **MUP-125** Vocal Jazz Ensemble: Mainstream

2 credits, Fall/Winter/Spring

Performing ensemble that cultivates musical, professional, and personal growth through rehearsal and performance with rhythm section of jazz, rock, pop, funk, and fusion. Includes study of jazz as it applies to vocal ensemble combined with rhythm section. Emphasis on style, improvisation, and techniques. Enrollment by audition. May be repeated for up to 6 credits.

### **MUP-141** College Orchestra

1 credits, Fall/Winter/Spring

Performance and study of orchestral literature. College students may earn credit for playing in one of several approved orchestral groups. Minimum of one performance per term. May be repeated for up to 8 credits. Required: Student Petition.

### **MUP-150** Contemporary Music Ensemble

2 credits, Fall/Winter/Spring

Studies the development and performance of original compositions through intensive musical collaboration and creation. May be repeated for up to 12 credits.

Required: Pass proficiency audition

### **MUP-158** Chamber Ensemble

1 credits, Fall/Winter/Spring

Rehearsal and performance of traditional vocal and instrumental chamber music (one musician per part). Includes concerts and coaching by area professionals. Highly recommended for music majors. May be repeated for up to 8 credits. First of a two-part series.

### **MUP-171** Individual Lessons: Piano

2 credits, Fall/Winter/Spring/Summer

College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.

Required: College-level performance ability

Corequisites: MUS-189

### **MUP-171J** Individual Lessons: Jazz Piano

2 credits, Fall/Winter/Spring/Summer

College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.

Required: College-level performance ability

### **MUP-171R** Individual Lessons: Rock, Blues, Pop Piano

2 credits, Fall/Winter/Spring/Summer

College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.

Required: College-level performance ability

### **MUP-172** Individual Lessons: Organ

2 credits, Fall/Winter/Spring/Summer

College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.

Required: College-level performance ability

Corequisites: MUS-189

### **MUP-174** Individual Lessons: Voice

2 credits, Fall/Winter/Spring/Summer

College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.

Required: College-level performance ability

Corequisites: MUS-189

### **MUP-174J** Individual Lessons: Jazz Voice

2 credits, Fall/Winter/Spring/Summer

College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.

Required: College-level performance ability

Corequisites: MUS-189





**MUP-185** Individual Lessons: Bassoon  
2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.  
Required: College-level performance ability  
Corequisites: MUS-189

**MUP-186** Individual Lessons: Trumpet  
2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.  
Required: College-level performance ability  
Corequisites: MUS-189

**MUP-186J** Individual Lessons: Jazz Trumpet  
2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.  
Required: College-level performance ability

**MUP-187** Individual Lessons: French Horn  
2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.  
Required: College-level performance ability  
Corequisites: MUS-189

**MUP-188** Individual Lessons: Trombone  
2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.  
Required: College-level performance ability  
Corequisites: MUS-189

**MUP-188J** Individual Lessons: Jazz Trombone  
2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.  
Required: College-level performance ability

**MUP-189** Individual Lessons: Euphonium  
2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.  
Required: College-level performance ability  
Corequisites: MUS-189

**MUP-190** Individual Lessons: Tuba  
2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.  
Required: College-level performance ability  
Corequisites: MUS-189

**MUP-191** Individual Lessons: Percussion  
2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.  
Required: College-level performance ability  
Corequisites: MUS-189

**MUP-191J** Individual Lessons: Jazz Percussion  
2 credits, Fall/Winter/Spring/Summer  
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits. Required: Student Petition.  
Required: College-level performance ability

**MUP-202** Wind Ensemble  
2 credits, Fall/Winter/Spring  
For non-majors and music majors. Introduction and study of traditional and contemporary band literature. This is the second year of a two-year course of study that includes performance, study of common styles and practices of historically and culturally significant composers/arrangers, and study of historical issues related to the development and performance of band literature. Provides a thorough groundwork in the fundamental ideas, techniques, and practices of band music and ensemble performance. No audition required. May be repeated for up to 6 credits.  
Required: Completion of high school or high school performance level.  
Ability to read music and play a band instrument  
Prerequisites: MUP-102 (6 credits)

**MUP-204** Pep Band/Combo-Improv  
1 credits, Fall/Winter/Spring  
Instrumental performing group concentrating on rock, pop, and contemporary styles in the small to medium-sized group setting. No audition required. May be repeated for up to 8 credits.  
Prerequisites: MUP-104 (3 credits)  
Recommended Prerequisites: MUP-105 or MUP-125

**MUP-205** Jazz Ensemble  
2 credits, Fall/Winter/Spring  
For non-majors and music majors. Introduction and study of common big-band and small-group jazz styles. This is the second year of a two-year course of study that includes performance, improvisation, musical arranging and writing, study of common styles and practices of historically and culturally significant jazz artists, and study of historical issues related to the development and performance of jazz music. May be repeated for up to 6 credits.  
Prerequisites: MUP-105 (6 credits)

**MUP-222** Chamber Choir  
2 credits, Fall/Winter/Spring  
Advanced vocal ensemble which rehearses and performs choral music from the Renaissance to the 21st century. Provides preparation for entering professional fields of music and performance. Emphasis on a cappella singing applied to appropriate chamber music. Recommended for vocal music majors. Enrollment by audition. May be repeated for up to 6 credits.  
Prerequisites: MUP-122 (6 credits)

**MUP-225** Vocal Jazz Ensemble: Mainstream

2 credits, Fall/Winter/Spring

Advanced performing ensemble that cultivates musical, professional, and personal growth through rehearsal and performance with rhythm section of jazz, rock, pop, funk, and fusion. Includes study of jazz as it applies to vocal ensemble combined with rhythm section. Emphasis on style, improvisation, and techniques. Enrollment by audition. May be repeated for up to 6 credits.

Prerequisites: MUP-125 (6 credits)

**MUP-241** College Orchestra

1 credits, Fall/Winter/Spring

Performance and study of orchestral literature. College students may earn credit for playing in one of several approved orchestral groups.

Minimum of one performance per term. May be repeated for up to 8 credits. Required: Student Petition.

**MUP-258** Chamber Ensemble

1 credits, Fall/Winter/Spring

Rehearsal and performance of traditional vocal and instrumental chamber music (one musician per part). Includes concerts and coaching by area professionals. Highly recommended for music majors. May be repeated for up to 8 credits. Second of a two-part series.

Prerequisites: MUP-158 (6 credits)

**MUP-271** Individual Lessons: Piano

2 credits, Fall/Winter/Spring/Summer

Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

Required: Sophomore-level performance ability

Prerequisites: MUP-171 (6 credits)

Corequisites: MUS-189

**MUP-271J** Individual Lessons: Jazz Piano

2 credits, Fall/Winter/Spring/Summer

Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

Required: Sophomore-level performance ability

Prerequisites: MUP-171J (6 credits)

**MUP-271R** Individual Lessons: Rock, Blues, Pop Piano

2 credits, Fall/Winter/Spring/Summer

Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

Required: Sophomore-level performance ability

Prerequisites: MUP-171R (6 credits)

**MUP-272** Individual Lessons: Organ

2 credits, Fall/Winter/Spring/Summer

Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

Required: Sophomore-level performance ability

Prerequisites: MUP-172 (6 credits)

Corequisites: MUS-189

**MUP-274** Individual Lessons: Voice

2 credits, Fall/Winter/Spring/Summer

Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

Required: Sophomore-level performance ability

Prerequisites: MUP-174 (6 credits)

Corequisites: MUS-189

**MUP-274J** Individual Lessons: Jazz Voice

2 credits, Fall/Winter/Spring/Summer

Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

Required: Sophomore-level performance ability

Prerequisites: MUP-174J (6 credits)

Corequisites: MUS-189

**MUP-275** Individual Lessons: Violin

2 credits, Fall/Winter/Spring/Summer

Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

Required: Sophomore-level performance ability

Prerequisites: MUP-175 (6 credits)

Corequisites: MUS-189

**MUP-276** Individual Lessons: Viola

2 credits, Fall/Winter/Spring/Summer

Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

Required: Sophomore-level performance ability

Prerequisites: MUP-176 (6 credits)

Corequisites: MUS-189

**MUP-277** Individual Lessons: Cello

2 credits, Fall/Winter/Spring/Summer

Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

Required: Sophomore-level performance ability

Prerequisites: MUP-177 (6 credits)

Corequisites: MUS-189

**MUP-278** Individual Lessons: Bass

2 credits, Fall/Winter/Spring/Summer

Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

Required: Sophomore-level performance ability

Prerequisites: MUP-178 (6 credits)

Corequisites: MUS-189

**MUP-278J** Individual Lessons: Jazz Bass

2 credits, Fall/Winter/Spring/Summer

Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

Required: Sophomore-level performance ability

Prerequisites: MUP-178J (6 credits)

**MUP-279** Individual Lessons: Harp  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-179 (6 credits)  
Corequisites: MUS-189

**MUP-280** Individual Lessons: Guitar  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-180 (6 credits)  
Corequisites: MUS-189

**MUP-280J** Individual Lessons: Jazz Guitar  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-180J (6 credits)

**MUP-280R** Individual Lessons: Rock, Blues, Pop Guitar  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-180R (6 credits)

**MUP-281** Individual Lessons: Flute  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-181 (6 credits)  
Corequisites: MUS-189

**MUP-281J** Individual Lessons: Jazz Flute  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-181J (6 credits)

**MUP-282** Individual Lessons: Oboe  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-182 (6 credits)  
Corequisites: MUS-189

**MUP-283** Individual Lessons: Clarinet  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-183 (6 credits)  
Corequisites: MUS-189

**MUP-283J** Individual Lessons: Jazz Clarinet  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-183J (6 credits)

**MUP-284** Individual Lessons: Saxophone  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-184 (6 credits)  
Corequisites: MUS-189

**MUP-284J** Individual Lessons: Jazz Saxophone  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-184J (6 credits)

**MUP-285** Individual Lessons: Bassoon  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-185 (6 credits)  
Corequisites: MUS-189

**MUP-286** Individual Lessons: Trumpet  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-186 (6 credits)  
Corequisites: MUS-189

**MUP-286J** Individual Lessons: Jazz Trumpet  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-186J (6 credits)

**MUP-287** Individual Lessons: French Horn  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-187 (6 credits)  
Corequisites: MUS-189

**MUP-288** Individual Lessons: Trombone  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-188 (6 credits)  
Corequisites: MUS-189

**MUP-288J** Individual Lessons: Jazz Trombone  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-188J (6 credits)

**MUP-289** Individual Lessons: Euphonium  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-189 (6 credits)  
Corequisites: MUS-189

**MUP-290** Individual Lessons: Tuba  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-190 (6 credits)  
Corequisites: MUS-189

**MUP-291** Individual Lessons: Percussion  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-191 (6 credits)  
Corequisites: MUS-189

**MUP-291J** Individual Lessons: Jazz Percussion  
2 credits, Fall/Winter/Spring/Summer  
Second-year private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.  
Required: Sophomore-level performance ability  
Prerequisites: MUP-191J (6 credits)

## Nursing (NRS)

**NRS-110** Foundations of Nursing - Health Promotion  
5 credits, Fall

This course introduces the learner to framework of the OCNE curriculum. The emphasis on health promotion across the life span includes learning about self-health as well as patient health practices. To support self and patient health practices, students learn to access research evidence about healthy lifestyle patterns and risk factors for disease/illness, apply growth and development theory, interview patients in a culturally sensitive manner, work as members of a multidisciplinary team giving and receiving feedback about performance, and use reflective thinking about their practice as nursing students. Populations studied in the course include children, adults, older adults and the family experiencing a normal pregnancy. Includes classroom and clinical learning experiences. The clinical portion of the course includes practice with therapeutic communication skills and selected core nursing skills identified in the OCNE Core Nursing Skills document.

Required: Acceptance into the CCC nursing program  
Corequisites: NRS-110C and NRS-230

**NRS-110C** Foundations of Nursing - Health Promotion Clinical  
4 credits, Fall

This course introduces the learner to framework of the OCNE curriculum. The emphasis on health promotion across the life span includes learning about self-health as well as client health practices. To support self and client health practices, students learn to access research evidence about healthy lifestyle patterns and risk factors for disease/illness, apply growth and development theory, interview clients in a culturally sensitive manner, work as members of a multidisciplinary team giving and receiving feedback about performance, and use reflective thinking about their practice as nursing students. Populations studied in the course include children, adults, older adults and the family experiencing a normal pregnancy. Includes classroom and clinical learning experiences.

Required: Acceptance into the CCC nursing program  
Corequisites: NRS-110 and NRS-230

**NRS-111** Foundations of Nursing in Chronic Illness I  
3 credits, Winter

This course introduces assessment and common interventions (including technical procedures) for patients with chronic illnesses common across the life span in multiple ethnic groups. The patient's and family's lived experience of the condition is explored. Clinical practice guidelines and research evidence are used to guide clinical judgments in care of individuals with chronic conditions. Multidisciplinary team roles and responsibilities are explored in the context of delivering safe, high quality health care to individuals with chronic conditions (includes practical and legal aspects of delegation). Cultural, ethical, legal and health care delivery issues are explored through case scenarios and clinical practice. Case exemplars include children with asthma, adolescents with a mood disorder, adults with type 2 diabetes, and older adults with dementia. The course includes classroom and clinical learning experiences.

Required: Acceptance into the CCC nursing program  
Prerequisites: NRS-110, NRS-110C, and NRS-230  
Corequisites: NRS-111C, NRS-231, and NRS-232

**NRS-111C** Foundations of Nursing in Chronic Illness I Clinical  
3 credits, Winter

This course introduces assessment and common interventions (including technical procedures) for clients with chronic illnesses common across the life span in major ethnic groups within Oregon. The client's and family's lived experience of the condition is explored. Clinical practice guidelines and research evidence are used to guide clinical judgments in care of individuals with chronic conditions. Multidisciplinary team roles and responsibilities are considered in the context of delivering safe, high quality health care to individuals with chronic conditions (includes practical and legal aspects of delegation). Cultural, ethical, legal and health care delivery issues are explored through case scenarios and clinical practice. Case exemplars include children with asthma, adolescents with a mood disorder, adults with type 2 diabetes, and older adults with dementia. The course includes classroom and clinical learning experiences with simulation experience as part of total clinical hours.

Required: Acceptance into the CCC nursing program

Prerequisites: NRS-110, NRS-110C, and NRS-230

Corequisites: NRS-111, NRS-231, and NRS-232

**NRS-112** Foundations of Nursing in Acute Care I  
2 credits, Spring

This course introduces the learner to assessment and common interventions (including relevant technical procedures) for care of patients across the lifespan who require acute care, including normal childbirth. Disease/illness trajectories and their translation into clinical practice guidelines and/or standard procedures are considered in relation to their impact on providing culturally sensitive, patient-centered care. Includes classroom and clinical learning experiences.

Required: Acceptance into the CCC nursing program

Prerequisites: NRS-111, NRS-111C, NRS 231, and NRS-232

Corequisites: NRS-112C and NRS-233

**NRS-112C** Foundations of Nursing in Acute Care I Clinical  
4 credits, Spring

This course introduces the learner to assessment and common interventions (including relevant technical procedures) for care of patients across the lifespan who require acute care, including natural childbirth. Disease/illness trajectories and their translation into clinical practice guidelines and/or standard procedures are considered in relation to their impact on providing culturally sensitive, client-centered care. Includes classroom and clinical learning experiences.

Required: Acceptance into the CCC nursing program

Prerequisites: NRS-111, NRS-111C, NRS 231, and NRS-232

Corequisites: NRS-112 and NRS-233

**NRS-221** Chronic Illness II and End of Life  
4 credits, Winter

This course builds on Foundations of Nursing in Chronic Illness I. Chronic Illness II expands the student's knowledge related to family care giving, symptom management and end of life concepts. These concepts are a major focus and basis for nursing interventions with patients and families. Ethical issues related to advocacy, self-determination, and autonomy are explored. Complex skills associated with the assessment and management of concurrent illnesses and conditions are developed within the context of patient and family preferences and needs. Skills related to enhancing communication and collaboration as a member of an interprofessional team and across health care settings are further explored. Exemplars include patients with chronic mental illness and addictions as well as other chronic conditions and disabilities affecting functional status and family relationships. The course includes classroom and clinical learning experiences.

Required: Acceptance into the CCC nursing program

Prerequisites: NRS-222 and NRS-222C

Corequisites: NRS-221C

**NRS-221C** Chronic Illness II and End of Life Clinical  
5 credits, Winter

This course builds on NRS-111 and expands the student's knowledge related to family care giving, symptom management and end of life concepts. These concepts are a major focus and basis for nursing interventions with patients and families. Ethical issues related to advocacy, self determination, and autonomy are explored. Complex skills associated with the assessment and management of concurrent illnesses and conditions are developed within the context of patient and family preferences and needs. Skills related to enhancing communication and collaboration as a member of an interdisciplinary team are further explored. Exemplars include patients with chronic mental illness and addictions as well as other chronic conditions and disabilities affecting functional status and family relationships. The course includes classroom and clinical learning experiences.

Required: Acceptance into the CCC nursing program

Prerequisites: NRS-222 and NRS-222C

Corequisites: NRS-221

**NRS-222** Nursing in Acute Care II & End of Life  
4 credits, Fall

This course builds on Nursing in Acute Care I, focusing on more complex and/or unstable patient care conditions, some of which may result in death. These patient care conditions require strong noticing and rapid decision making skills. Evidence base is used to support appropriate focused assessments, and effective, efficient nursing interventions. Life span and developmental factors, cultural variables, and legal aspects of care frame the ethical decision-making employed in patient choices for treatment or palliative care for disorders with an acute trajectory. Case scenarios incorporate prioritizing care needs, delegation and supervision, and family and patient teaching for either discharge planning or end-of-life care. Exemplars include acute conditions affecting multiple body systems. Includes classroom and clinical learning experiences.

Required: Acceptance into the CCC nursing program

Prerequisites: NRS-112, NRS-112C, and NRS-233

Corequisites: NRS-222C



**NRS-222C** Nursing in Acute Care II & End of Life Clinical

5 credits, Fall

This course builds on NRS-112, and focuses on more complex and/or unstable patient care conditions, some of which may result in death. These patient care conditions require strong noticing and rapid decision making skills. Evidence base is used to support appropriate focused assessments, and effective, efficient nursing interventions. Life span and developmental factors, cultural variables, and legal aspects of care frame the ethical decision-making employed in patient choices for treatment or palliative care within the acute care setting. Case scenarios incorporate prioritizing care needs, delegation and supervision, and family and patient teaching for either discharge planning or end-of-life care. Exemplars include acute conditions affecting multiple body systems. Includes classroom and clinical learning experiences.

Required: Acceptance into the CCC nursing program

Prerequisites: NRS-112, NRS-112C, and NRS-233

Corequisites: NRS-222

**NRS-224** Integrative Practicum

2 credits, Spring

This course is designed to formalize the clinical judgments, knowledge and skills necessary in safe, registered nurse practice. Faculty/Clinical Teaching Associate/Student Triad Model provides a context that allows the student to experience the nursing role in a selected setting, balancing demands of professional nursing and lifelong learner. Analysis and reflection throughout the clinical experience provide the student with evaluative criteria against which they can judge their own performance and develop a practice framework. Includes seminar, self-directed study and clinical experience.

Required: Acceptance into the CCC nursing program

Prerequisites: NRS-221 and NRS-221C

Corequisites: NRS-224C

**NRS-224C** Integrative Practicum Clinical

7 credits, Spring

This course is designed to formalize the clinical judgments, knowledge and skills necessary in safe, registered nurse practice. Faculty/Clinical Teaching Associate/Student Triad Model provides a context that allows the student to experience the nursing work world in a selected setting, balancing demands of job and lifelong learner. Analysis and reflection throughout the clinical experience provide the student with evaluative criteria against which they can judge their own performance and develop a practice framework. Includes seminar, self-directed study and clinical experience.

Required: Acceptance into the CCC nursing program

Prerequisites: NRS-221 and NRS-221C

Corequisites: NRS-224

**NRS-230** Clinical Pharmacology I

3 credits, Fall

This course introduces the theoretical background that enables students to provide safe and effective care related to drugs and natural products to persons throughout the lifespan. It includes the foundational concepts of principles of pharmacology, nonopioid analgesics, and antibiotics, as well as additional classes of drugs. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of information, understanding of pharmacokinetics and pharmacodynamics, developmental physiologic considerations, monitoring and evaluating the effectiveness of drug therapy, teaching persons from diverse populations regarding safe and effective use of drugs and natural products, intervening to increase therapeutic benefits and reduce potential negative effects, and communicating appropriately with other health professionals regarding drug therapy. Drugs are studied by therapeutic or pharmacological class using an organized framework.

Required: Acceptance into the CCC nursing program

Corequisites: NRS-110 and NRS-110C

**NRS-231** Clinical Pharmacology II

3 credits, Winter

This sequel to Clinical Pharmacology I continues to provide the theoretical background that enables students to provide safe and effective nursing care related to drugs and natural products to persons throughout the lifespan. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of information, monitoring and evaluating the effectiveness of drug therapy, teaching persons from diverse populations regarding safe and effective use of drugs and natural products, intervening to increase therapeutic benefits and reduce potential negative effects, and communicating appropriately with other health professionals regarding drug therapy. The course addresses additional classes of drugs and related natural products not contained in NRS-230, Clinical Pharmacology I.

Required: Acceptance into the CCC nursing program

Prerequisites: NRS-110, NRS-110C, and NRS-230

Corequisites: NRS-111, NRS-111C, and NRS-232

**NRS-232** Pathophysiological Processes I

3 credits, Winter

This course introduces pathophysiological processes that contribute to many different disease states across the lifespan and human responses to those processes. It includes the foundational concepts of cellular adaptation, injury, and death; inflammation and tissue healing; fluid and electrolyte imbalances; and physiologic response to stressors, as well as additional pathophysiological processes. Students will learn to make selective clinical decisions in the context of nursing regarding using current, reliable sources of pathophysiology information, selecting and interpreting focused nursing assessments based on knowledge of pathophysiological processes, teaching persons from diverse populations regarding pathophysiological processes, and communicating with other health professionals regarding pathophysiological processes.

Required: Acceptance into the CCC nursing program

Prerequisites: NRS-110, NRS-110C, and NRS-230

Corequisites: NRS-111, NRS-111C, and NRS-231

**NRS-233** Pathophysiological Processes II

3 credits, Spring

This sequel to NRS-232 continues to explore pathophysiological processes that contribute to disease states across the lifespan and human responses to those processes. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of pathophysiology information, selecting and interpreting focused nursing assessments based on knowledge of pathophysiological processes, teaching persons from diverse populations regarding pathophysiological processes, and communicating with other health professionals regarding pathophysiological processes. The course addresses additional pathophysiological processes not contained in Pathophysiological Processes I.

Required: Acceptance into the CCC nursing program

Prerequisites: NRS-111, NRS-111C, NRS-231, and NRS-232

Corequisites: NRS-112 and NRS-112C

## Nursing (NUR)

**NUR-100** Nursing Assistant I

6.5 credits, Fall/Winter/Spring/Summer

Prepares the student to perform routine nursing assistant tasks to clients in sub-acute care settings as well as in the community. Includes didactic and skills lab instruction. Major topics covered include: collaboration with health care team, communication & interpersonal skills, person-centered care, infection control and prevention, safety and emergency procedures, assisting with activities of daily living, mental health and social service needs of clients, technical skills, acquiring observation and reporting skills, documentation of care provided and end-of-life care.

Corequisites: NUR-100C

**NUR-100C** Nursing Assistant I Clinical

0 credits, Fall/Winter/Spring/Summer

Prepares the student to perform routine nursing assistant tasks to clients in hospitals, long-term and skilled care facilities, as well as the community. Includes clinical practicum. Required: Student Petition.

Corequisites: NUR-100

**NUR-101** Certified Nursing Assistant II

5 credits, Not Offered Every Term

This course prepares the student to perform routine nursing assistant level II tasks that are needed in the acute or skilled care setting. This course includes concepts of safety and complication prevention.

Students will also learn how to communicate a person's response(s) to the nurse, and document and record outcomes of a person's care.

Required: Student Petition.

Required: Attend CNA II mandatory orientation and complete all required data for Corporate Screening.

Must have a current Certified Nursing Assistant I License in the state of Oregon with a copy of a current and active OSBN verification of license letter

Recommended Prerequisites: WRD-098 or placement in WR-121Z.

Student should be 18 years of age or older

Corequisites: NUR-101C

**NUR-101C** Certified Nursing Assistant II Acute Care Clinical

0 credits, Not Offered Every Term

This course prepares the student to perform routine nursing assistant 2 acute care tasks that are needed in the acute care setting. This course requires a minimum of 30 hours of clinical instruction. Required: Student Petition.

Corequisites: NUR-101

## Occupational Skills Training (OST)

**OST-180** Occupational Skills Training/CWE

1-12 credits, Not Offered Every Term

Cooperative work experience. Provides students hands-on training in a specific occupational area. The class and program are designed for students who need work-based training and classroom instruction to be competitively employable. Variable Credit: 1-12 credits. May be repeated for up to 24 credits. Required: Student Petition.

## Philosophy (PHL)

**PHL-101** Philosophical Problems

4 credits, Fall/Winter/Spring

Introduces basic philosophical questions such as: What is reality? What is knowledge? What is truth? Can humans freely choose? What is human awareness? What is a meaningful life?

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**PHL-102** Ethics

4 credits, Fall/Winter/Spring

Introduces the study of morality with concepts of good, harm, habits, character, perception, behavior and action. Also considers the different theories of human capacity for responsibility.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**PHL-103** Critical Reasoning

4 credits, Fall/Winter/Spring

Helps students identify and understand the process by which they themselves and others arrive at conclusions; improves their critical reasoning skills; introduces basic logical concepts of argument; and gives opportunity for students to apply course skills to relevant matters.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**PHL-205** Moral Issues

4 credits, Not Offered Every Term

Examines contemporary moral issues from a selection of different philosophical perspectives. Provides some historical context as background in order to understand our current moment.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**PHL-210** Philosophy of Religion

4 credits, Not Offered Every Term

Investigates religious concepts across varying religious expressions. Uses philosophical tools to explore the creation, development and interpretation of these concepts across culture and history.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**PHL-213** Asian Philosophy

4 credits, Not Offered Every Term

Examines the underlying thought systems connected with Hinduism, Buddhism, Taoism, and Confucianism. Topics include: the nature of reality, the self, causality, knowledge, and ethics.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**PHL-216** Ancient Philosophy

4 credits, Not Offered Every Term

Explores the roots of Western philosophy by delving into ancient Greek philosophy with a focus on the works of Plato and Aristotle. Includes an examination of the birth of Western science from its philosophical origins.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

## Physical Education (PE)

### PE-185 Physical Education

1 credits, Fall/Winter/Spring/Summer

Various activity classes which may include aikido, aerobic dance, ballet, basketball, conditioning, cross training, golf, karate, racquetball, rock climbing, self-defense, soccer, softball, swimming, swing dance, tai chi, tennis, volleyball, weight training, yoga, and zumba.

Recommended: Current physical examination before enrolling

### PE-194 Professional Activities

1 credits, Not Offered Every Term

Team skills and strategy courses. Designed to provide the student with basic skills and methodology necessary to conduct physical fitness programs in the school, corporate, and community setting. Emphasis is placed on fitness concepts, techniques of weight training and aerobic exercises to encourage life-long physical activity. Course offerings are: baseball, basketball, cross-country, soccer, softball, track and field, volleyball, and wrestling. Required: Student Petition.

### PE-240 Strength & Conditioning Theory & Techniques

3 credits, Fall/Winter/Spring

An overview of introductory exercise physiology, biomechanics, program design, and exercise techniques that prepares students to design and implement physical training programs and exercise for clients and athletes.

### PE-260 Care and Prevention of Athletic Injuries

2 credits, Winter

This course introduces the concepts of sports medicine. The course will benefit those students interested in improving their own knowledge as a recreational athlete, or in career areas such as physical and health education, coaching, sports medicine, nursing, physical and occupational therapy. Taping techniques and rehabilitation methods of injury will be discussed and practiced.

### PE-270 Sport and Exercise Psychology

3 credits, Fall/Winter/Spring

The course is designed to provide students with the basic understanding and knowledge of psychological skills used to improve physical performance in themselves, peers, teammates, and athletes they coach. The course would be well-suited for athletes, coaches, or exercise leaders.

### PE-280 Physical Education/CWE

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job experience and training related to the Physical Education field. Covers job problems and procedures, evaluation of students' job performance by qualified college staff and site supervision. Variable Credit: 2-6 credits. May be repeated for up to 12 credits. Required: Student Petition.

Corequisites: CWE-281

### PE-294 Professional Activities

1 credits, Not Offered Every Term

Advanced team skills and strategy courses. Designed to provide the student with basic skills and methodology necessary to conduct physical fitness programs in the school, corporate, and community setting. Emphasis is placed on fitness concepts, techniques of weight training and aerobic exercises to encourage life-long physical activity. Course offerings are: baseball, basketball, cross-country, soccer, softball, track and field, volleyball, and wrestling. Required: Student Petition.

### PE-294A Philosophy of Coaching

2 credits, Fall/Winter/Spring

This course is designed to enhance the leadership, teaching and management skills of coaches as they relate to interacting with athletes at all levels. Group discussions and seminar sessions relating to coaching philosophies, ethics, practice planning, motivation, and dealing with parents, peers and assistants.

## Physics (PH)

### PH-121 Astronomy

4 credits, Fall/Winter/Spring

A lab course including the history of astronomy, the Earth and moon, all planets in our solar system, along with asteroids, meteors and comets.

Prerequisites: MTH-065 or MTH-098 with a C or better or placement in MTH-095

Prerequisites: WRD-090 or placement in WRD-098

Corequisites: PH-121L

### PH-122 General Astronomy

4 credits, Fall/Winter/Spring

A lab course including the properties of our sun, other stars and stellar evolution.

Prerequisites: PH-121 or GS-107

Corequisites: PH-122L

### PH-123 General Astronomy

4 credits, Spring

A lab course including star clusters, the properties of our own galaxy, the other galaxies and cosmology.

Prerequisites: PH-122

Corequisites: PH-123L

### PH-150 Preparatory Physics

3 credits, Spring

This course is intended for students who have not completed high-school physics, but are intending to take either PH-201 or PH-211. Students will develop reasoning skills, and learn problem-solving strategies, measurement units, graph interpretation, and basic physics definitions needed for their General Physics courses.

Prerequisite or Corequisite: MTH-112Z or placement in MTH-251

### PH-201 General Physics

5 credits, Fall

A lab course covering vectors, motion, kinematics, forces and Newton's laws, gravity, the conservation laws for momentum and energy, rotational motion, and oscillations.

Prerequisites: WRD-090 with a C or better or placement in WRD-098

Prerequisites: MTH-112Z or placement in MTH-251

Recommended Prerequisites: A year of high-school physics or PH-150

Corequisites: PH-201L and PH-201S

### PH-202 General Physics

5 credits, Winter

A lab course covering electricity, magnetism, DC and AC circuits, and electromagnetic radiation.

Prerequisites: PH-201

Corequisites: PH-202L and PH-202S

### PH-203 General Physics

5 credits, Spring

A lab course covering thermodynamics, fluids, waves, geometrical optics, wave optics, and modern physics.

Prerequisites: PH-202

Corequisites: PH-203L and PH-203S

**PH-211** General Physics With Calculus

5 credits, Fall

A lab course covering vectors, motion, kinematics, forces and Newton's laws, gravity, conservation laws for momentum and energy, rotational motion, and oscillations.

Prerequisite or Corequisite: MTH-252

Prerequisite or Corequisite: WRD-090 with a C or better or placement in WRD-098

Recommended Prerequisites: MTH-254.

A year of high-school physics or PH-150

Corequisites: PH-211L and PH-211S

**PH-212** General Physics With Calculus

5 credits, Winter

A lab course covering electricity, magnetism, DC and AC circuits, and electromagnetic radiation.

Prerequisites: MTH-252 and PH-211

Recommended Prerequisites: MTH-254

Corequisites: PH-212L and PH-212S

**PH-213** General Physics With Calculus

5 credits, Spring

A lab course covering thermodynamics, fluids, waves, geometrical optics, wave optics, and modern physics.

Prerequisites: PH-212

Corequisites: PH-213L and PH-213S

## Political Science (PS)

**PS-200** Introduction to Political Science

4 credits, Summer/Fall/Spring

A general introduction to the field of political science. Introduces and expands on basic political concepts and themes, explores political theory and ideology, and considers the dynamics of political institutions and government and how both are integrated into political life.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**PS-201** American Government and Politics

4 credits, Summer/Fall/Winter

Examines the founding principles of the American government, as well as the Constitution, the separation of powers, and the three branches of government, political parties and elections, and the role of interest groups and the media in the political process. In addition, assesses the growing power of the executive branch, the expansion and reach of the federal bureaucracy, governmental policies, and the civil liberties and civil rights of American citizens.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**PS-203** State and Local Governments

4 credits, Not Offered Every Term

Introduces students to state and local governments in the United States, with an emphasis on Oregon politics at the state and local level. Assesses the structure, functions, and processes of state, county, and municipal governments, as well as the role of the legislative, executive, and judicial branches of government and the separation of powers at the state level. In addition, examines the role of political parties, elections, and the public policy process at the state and local level.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**PS-204** Introduction to Comparative Politics

4 credits, Not Offered Every Term

Explores the various ideologies, institutions, and processes that constitute the nation-states that make up the world political system. Introduces students to the comparative method of political science. Assesses the fundamental differences between presidential and parliamentary systems, and the various political systems and governments around the world within the context of current world politics. In addition, examines the creation, the role, and the development of political and government institutions from a comparative perspective.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**PS-205** International Relations

4 credits, Not Offered Every Term

Introduces theoretical and methodological tools for the analysis of contemporary world politics. Explores international relations by examining the institutions that constitute the international system. In addition, examines international institutions and nation-state behavior and surveys foreign policy models, diplomacy, peacekeeping and terrorism.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**PS-225** Introduction to Political Ideologies

4 credits, Not Offered Every Term

Introduces students to various ideological constructs; the origins and development of various political ideologies; the political theorists identified with specific ideologies; and examines the role of ideology in modern politics and governance.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**PS-280** Political Science/CWE

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of political science. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

**PS-297** Introduction to Environmental Politics

4 credits, Not Offered Every Term

Explores and assesses the politics informing environmental policy; the tension between politics, policy and scientific expertise; the role of the legislative, executive, and judicial branches of government in crafting and implementing environmental policy; and the critical impact non-governmental institutions and pressure groups have on environmental policy development and outcomes.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

## Program for Intensive English (PIE)

**PIE-020** Upper Beginning Grammar

0 credits, Fall/Winter/Spring/Summer

English language learners study and practice basic verb forms (simple present, and present progressive) and adverbs of frequency in written and spoken English. Required: Student Petition.

**PIE-024** Upper Beginning Reading & Writing

0 credits, Fall/Winter/Spring/Summer

English language learners read short texts to improve reading skills, write simple, compound, and complex sentences, and write related sentences in paragraph form for the contexts of school, work, family and community. Required: Student Petition.



**PIE-030 Intermediate Grammar A**

0 credits, Fall/Spring

One of a two-part series. English language learners study and practice simple present, present progressive, and future verb forms and modals of ability, permission, and advice. Required: Student Petition.

**PIE-031 Intermediate Grammar B**

0 credits, Summer/Winter

One of a two-part series. English language learners study and practice simple past verb forms, 'used to', present perfect verb forms with time expressions, and comparative and superlative adjectives and adverbs. Required: Student Petition.

**PIE-032 Intermediate Conversation**

0 credits, Fall/Winter/Spring/Summer

English language learners study and practice speaking and listening skills and strategies in structured tasks to improve fluency in the contexts of school, work, family and community. Required: Student Petition.

**PIE-033 Intermediate Conversation II**

0 credits, Summer/Winter/Spring

English language learners study and practice speaking and listening skills and strategies in structured tasks to improve fluency in the contexts of school, work, family and community. One of a 2-part series. Required: Student Petition.

**PIE-034 Intermediate Reading & Writing**

0 credits, Fall/Winter/Spring/Summer

English language learners read a variety of texts to improve reading skills, and write paragraphs focused on a single topic developed with logically organized facts and details for the contexts of school, work, family and community. Required: Student Petition.

**PIE-042 Upper Intermediate Conversation**

0 credits, Fall/Winter/Spring/Summer

English language learners study and practice speaking and listening skills and strategies for independent communication to improve fluency in the contexts of school, work, family and community. Required: Student Petition.

**PIE-043 Upper Intermediate Conversation II**

0 credits, Summer/Winter

English language learners study and practice speaking and listening skills and strategies for independent communication to improve fluency in the contexts of school, work, family and community. One of a 2-part series. Required: Student Petition.

**PIE-044 Upper Intermediate Reading & Writing**

0 credits, Fall/Winter/Spring/Summer

English language learners read a variety of texts to improve reading skills, and produce basic multi-paragraph texts for the contexts of school, work, family and community. Required: Student Petition.

**PIE-046 Editing for Better Writing**

0 credits, Fall/Winter/Spring/Summer

English language learners improve their writing through editing. They will also engage in extended reading to provide a context for writing. Required: Student Petition.

**PIE-050 Advanced Grammar A**

0 credits, Not Offered Every Term

One of a three-part series. English language learners study and practice modals, adverb clauses, and discourse connectors in written and spoken English. Required: Student Petition.

**PIE-051 Advanced Grammar B**

0 credits, Not Offered Every Term

One of a three-part series. English language learners study and practice count/non-count nouns, definite/indefinite articles, and noun clauses in written and spoken English. Required: Student Petition.

**PIE-052 Advanced Communication Skills 1**

0 credits, Not Offered Every Term

English language learners practice speaking and listening strategies for effective communication in discussions, presentations, lectures, note-taking, and group projects. The course builds vocabulary, critical thinking skills, and an awareness of non-verbal communication. The focus of this course is to prepare students for college success. Required: Student Petition.

**PIE-053 Advanced Communication Skills 2**

0 credits, Not Offered Every Term

English language learners practice speaking and listening strategies for effective communication for discussions, interviews, presentations, and note-taking to improve fluency in speaking and listening. Students will study the important effect intonation and body language have on meaning, build vocabulary and critical thinking skills, and develop confidence in speaking with purpose. The focus of this course is to prepare students for success in the workplace and community. Required: Student Petition.

**PIE-054 Advanced Reading & Writing**

0 credits, Fall/Winter/Spring

English language learners develop writing skills including summarizing, response writing, and paraphrasing, and improve writing fluency. Develop reading skills and fluency through reading a range of texts on a variety of topics. Required: Student Petition.

**PIE-055 Advanced Grammar C**

0 credits, Not Offered Every Term

One of a three-part series. English language learners study and practice gerunds, infinitives, passive voice, and adjective clauses in written and spoken English. Required: Student Petition.

**PIE-060 Vocabulary Building 1**

0 credits, Not Offered Every Term

One of a two-part series. English language learners develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and the Academic Word List, and develop their vocabulary acquisition skills. Required: Student Petition.

**PIE-061 Vocabulary Building 2**

0 credits, Not Offered Every Term

One of a two-part series. English language learners develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and the Academic Word List, and develop their vocabulary acquisition skills. Required: Student Petition.

**PIE-062 ESOL Reading**

0 credits, Not Offered Every Term

English language learners at all levels improve their reading fluency and expand and solidify their English vocabulary as needed for more advanced ESOL and everyday life. Required: Student Petition.



**PIE-068** Basic Computer Skills for English Language Learners

0 credits, Not Offered Every Term

English language learners beyond the beginning level develop knowledge of computer basics and popular computer applications. Learners select from a menu of learning options and participate in learning groups or study independently in a supported environment. The course includes an overview of computer components and terminology and an introduction to applications such as Microsoft programs (Word, Excel and PowerPoint), Internet basics, e-mail, and online career search skills. English reading, writing, speaking, and listening skills are developed through a variety of computer projects and interactive classroom work. Required: Student Petition.

**PIE-069** Pronunciation

0 credits, Not Offered Every Year

English language learners develop pronunciation skills and knowledge to improve speech clarity, listening effectiveness, and pronunciation of written words. Required: Student Petition.

**PIE-091** PIE Skills Lab

0 credits, Fall/Winter/Spring/Summer

This course is intended to intensify students' learning at each level. Students build on the language learning skills and strategies introduced and practiced in other English language acquisition classes. Required: Student Petition.

## Psychology (PSY)

**PSY-101** Human Relations

3 credits, Fall/Winter/Spring/Summer

Focuses on developing skills and strategies necessary to build and maintain successful personal and professional relationships. Applies psychological principles to understanding relationships with ourselves and others in social, workplace, and digital contexts. Includes an overview of basic psychology principles in addition to skill development in the following areas: dealing with emotions, interpersonal communication, developing close relationships, resolving conflicts, and managing stress. Includes individual and group activities, lecture, and discussions with an emphasis on student participation.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**PSY-200** Introduction to Psychology: Part 1

4 credits, Fall/Winter/Spring/Summer

Introduction to the science of psychology and the application of psychological concepts as they relate to everyday life. Emphasis will be placed on building a foundation of psychological concepts, theories, and principles related to research methods, the biological basis of behavior, human development, memory, cognition and language, consciousness, sensory processes, perception, and related topics. PSY-200 and PSY-205 are not sequential.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**PSY-205** Introduction to Psychology: Part 2

4 credits, Fall/Winter/Spring/Summer

Introduction to the science of psychology and the application of psychological concepts as they relate to everyday life. Emphasis will be placed on building a foundation of psychological concepts, theories, and principles related to social psychology, learning, motivation and emotion, personality, psychological disorders, therapies, and related topics. PSY-200 and PSY-205 are not sequential.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**PSY-215** Introduction to Developmental Psychology

4 credits, Fall/Winter/Spring/Summer

Research and theories regarding the development of the individual from conception to death, including physical, social and cognitive changes.

Prerequisite or Corequisite: WRD-098 or placement in WR-121Z

**PSY-219** Introduction to Abnormal Psychology

4 credits, Fall/Winter/Spring

Introduction to abnormal psychology, including disorders and approaches to treatment.

Prerequisite or Corequisite: WRD-098 or placement in WR-121Z

**PSY-231** Introduction to Human Sexuality

4 credits, Not Offered Every Term

Introduction to research and theories of human sexual behavior, including: sexual relationships, communication and intimacy, sex roles, the development of gender, social trends regarding sexuality, human sexual response, biology of sexuality, and conception.

Prerequisite or Corequisite: WRD-098 or placement in WR-121Z

**PSY-280** Psychology/CWE

2-6 credits, Fall/Winter/Spring

Cooperative work experience. This course allows students to engage in real-world learning and apply their academic knowledge in the field of psychology. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

## Religion (R)

**R-101** Judaism and Foundations of Religion

4 credits, Fall

An introduction to religious topics, meaning of sacred, the nature of myth and story, ideas of God/god, ancient religions, and Judaism.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**R-102** Christianity and Islam

4 credits, Winter

An introduction to Christianity and Islam, New Testament and Quran, the nature of Trinity and Tawhid, and includes the history and philosophy of other Western religious developments.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**R-103** Asian Religions

4 credits, Spring

An introduction to the history, ideas, and philosophy of Asian religions including Hinduism, Buddhism, Jainism, Sikhism, Taoism, Confucianism, and Shintoism. Examine Asian religions' impact on contemporary culture. Recommended Prerequisites: WRD-090 or placement in WRD-098

**R-204** History of Christianity

4 credits, Not Offered Every Term

An introduction to early Christianity, the Apostles, and formulation of the New Testament canon. Developments of post-apostolic Christianity and theology into the Modern Age. Contemporary topics include: Christianity in conflict, ethical and social religious issues, and the face of contemporary Christianity.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**R-210** World Religions

4 credits, Not Offered Every Term

Examines religions and philosophies from around the world through film, text, and/or online presentations. Introduces Hinduism, Buddhism, Chinese/Japanese religions, Christianity, Judaism, Islam, and many other religious systems.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**R-211** History of the Old Testament

4 credits, Not Offered Every Term

An introduction to the Old Testament/Tanakh that covers the early developments of the Hebrew community: Patriarchs, Abraham, Moses, and Sinai. Examines Old Testament monarchy, prophets, and wisdom literature. Examines modern theories of biblical interpretation.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**R-212** History of the New Testament

4 credits, Not Offered Every Term

An introduction to the New Testament that includes the first century social, political, and religious influences on the New Testament texts, the life of Jesus, the Pauline letters, and other early Christian writings.

Recommended Prerequisites: WRD-090 or placement in WRD-098

**R-280** Religion/CWE

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of religion. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

## Renewable Energy Technology (RET)

For additional information, contact the Industrial Technology Department at 503-594-3318.

**RET-200** Renewable Energy Systems

2 credits, Fall

This course provides a survey of various renewable energy systems. Participants will learn about the benefits and limitations of each type of energy source as well as their functional principles. Students will participate in several field learning exercises related to energy systems. The intended audiences are technical students wishing to explore the Renewable Energy field and students from the humanities and social sciences wanting a better understanding of this socially important technology.

**RET-209** Renewable Energy I: Energy Efficiency

3 credits, Winter

This course concentrates on the conservation of scarce energy resources in residential, commercial and industrial applications. The course will examine the common sources of energy loss in building systems and homes, industrial processes and transportation. Students will be introduced to residential energy audits and mitigation. Topics will also include regenerative transportation systems, LEED certification, test instruments, insulation values, heat exchangers and financial payback period. Includes hands-on lab exercises.

Recommended Prerequisites: RET-200

**RET-211** Renewable Energy II: System Fundamentals

3 credits, Spring

This course in renewable systems will provide in-depth understanding of the technology, economics and policies relevant to each type of energy source. Analysis techniques to evaluate renewable energy applications from a systems design and selection perspective will be presented. Topics include physical operating principles, theoretical vs. actual system output, energy storage, efficiency and cost analysis. Includes hands-on lab exercises.

Prerequisites: RET-209

**RET-213** Renewable Energy III: Installation & Maintenance

3 credits, Fall

The third in a series of technical courses, Renewable Energy III: Installation and Maintenance will provide an introduction to installation and maintenance of renewable energy systems for commercial and residential installations. Students will apply their knowledge of electro-mechanical systems to the application of these systems. Topics covered will include site survey, site preparation, building codes, measurement tools, preventative maintenance and worksite safety. Includes hands-on lab exercises.

Prerequisites: RET-211

**RET-215** Renewable Energy IV: Systems Design

3 credits, Winter

This fourth course in the series will concentrate on systems design for renewable energy applications. Students will work together and apply concepts to evaluate, design and select one or more renewable energy systems for solar, wind or micro-hydro installations. Topics will include site surveys, structural elements, electrical generators, energy storage and electrical inversion.

Prerequisites: RET-213

**RET-217** Renewable Energy Capstone Project

3 credits, Spring

This final class in the Renewable Energy series will concentrate on a capstone project. Students will evaluate a proposal for an alternative energy solution and then design an installation to meet the needs of the proposal. Students will be expected to perform a site survey, quantify energy requirements, select appropriate technologies, calculate the payback period and finally fabricate an actual or conceptual energy solution where appropriate.

Prerequisites: RET-215

**RET-220** SCADA Fundamentals

3 credits, Not Offered Every Term

This course will introduce Supervisory Control and Data Acquisition (SCADA) to monitor and control industrial and renewable energy applications. Students will evaluate, design, and select one or more technologies for remote monitoring and actuation. Topics may include networking, hardware considerations, programming, monitoring systems, relays, motors, driver circuits, and electronics. Includes hands-on lab exercises.

Prerequisites: RET-200

**RET-240** Alternative Fuels

4 credits, Fall

Offers students familiarity and entry level skills to work with alternative fuel systems. Explores (technically, economically and ecologically) the following alternative fuels: bio-diesel, vegetable oils, electricity, ethanol, hydrogen, propane, methanol, natural gas, heat engines, fuel cell & hybrid vehicles.

**RET-280** Renewable Energy/CWE

1-12 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Major emphasis on work-based learning experience in the renewable energy field. Coordination of instruction and evaluation of student job performance will be provided by college faculty in conjunction with the student's employer/supervisor. Variable Credit: 1-12 credits. Required: Student Petition.

Corequisites: CWE-281

## Small Business Management (SBM)

For additional information, contact the Small Business Development Center at 503-594-0738.

### **SBM-011** Property Management Pre-License

0 credits, Fall/Spring

Prepares students to qualify for the Oregon Real Estate Property Management License exam by studying laws and statutes pertaining to the licensing and professional property management activity required by all licensees of the State of Oregon.

### **SBM-019** Innovation Bridge

0 credits, Fall/Winter/Spring

Provides a methodology to help current and hopeful entrepreneurs find the business value of new ideas, products, or concepts. The course takes students through a process that prompts new ways of thinking about the commercial potential of their ideas, and helps them shape their innovative idea into a complete product.

### **SBM-020** Small Business Greenhouse

0 credits, Fall/Spring

Two-term intensive training program designed to assist entrepreneurs in planning their business startups, and to develop existing businesses to make them more profitable and to create jobs. Students do extensive individual work on developing business plans with counseling from instructor.

### **SBM-021** Small Business Management I

0 credits, Fall

Part 1 of a multi-year program to help owners and managers of established businesses manage more effectively and achieve success. Course consists of class meetings, individual business counseling, peer networking, and work in/on the business. Class topics emphasize financial analysis, goals, and communication.

### **SBM-021A** Small Business Management I

0 credits, Fall

This class prepares small business owners to work ON the business rather than IN the business. Using the GrowthWheel toolbox students will work on four key challenges every business, large or small, must address: an attractive business concept; building lasting customer relations; maintaining profitable operations; and building a strong organizational structure.

### **SBM-021B** Small Business Management I

0 credits, Winter

Part 1 of a multi-year program to help owners and managers of established businesses manage more effectively and achieve success. Course consists of class meetings, individual business counseling, peer networking, and work in/on the business. The SBM class will address the challenges of creating an attractive business concept, building lasting customer relations, maintaining profitable operations, and developing strong organizational structure.

### **SBM-021C** Small Business Management I

0 credits, Spring

Part 1 of a multi-year program to help owners and managers of established businesses manage more effectively and achieve success. Course consists of class meetings, individual business counseling, peer networking, and work in/on the business. The SBM class will address the challenges of creating an attractive business concept, building lasting customer relations, maintaining profitable operations, and developing strong organizational structure.

### **SBM-024** Succession Planning

0 credits, Fall/Winter/Spring

Learn how to harvest your small farm business, not just your crops. Succession planning in small farm ownership is a critical and complex 3-10 year process that, when done properly, helps farmers maximize their return on their farm investment so they can reach their long-term goals in retirement. This hands-on, 12 month program is designed to teach farmers and individuals who want to buy a farm, how to make it happen. Course consists of monthly class meetings, individual business counseling, peer networking, and work in/on the business.

### **SBM-024C** Succession Planning

0 credits, Spring

Learn how to harvest your small farm business, not just your crops. Succession planning in small farm ownership is a critical and complex 3-10 year process that, when done properly, helps farmers maximize their return on their farm investment so they can reach their long-term goals in retirement. This hands-on, 3 month program is designed to teach farmers and individuals who want to buy a farm, how to make it happen. Course consists of monthly class meetings, individual business counseling, peer networking, and work in/on the business.

### **SBM-028** Small Business Management I for Construction Contractors

0 credits, Fall/Winter/Spring

Provides information on starting and growing a successful construction business. Teaches students marketing techniques, estimating methods, tax strategies and recordkeeping. Discusses best practices of working with subcontractors and hiring and managing employees.

## Social Science (SSC)

### **SSC-160** Faith & Reason

4 credits, Not Offered Every Term

An introduction of how personal concepts of faith & reason and institutions of science & religion shape personal intellectual landscapes. Examines classical philosophy, sacred texts, worldviews, modern fiction, poetry, theology, cosmology, and evolutionary biology.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

### **SSC-235** Perspectives on Terrorism

4 credits, Not Offered Every Term

Examines multiple perspectives of terrorism and investigates their assumptions and beliefs. Perspectives will include historical and psychological approaches as well as those of other academic disciplines, including art, literature, religion, and philosophy.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

### **SSC-237** Perspectives on Democracy and Dialogue

4 credits, Not Offered Every Term

This course gives students the opportunity to practice the fundamental keystone of democracy: dialogue. The course will explore the variety of American political thought and philosophies through conversations with others in the community, crossing the political spectrum as well as broaching the lines of urban/rural context, socio-economic class, racial and ethnic identity, sex-gender identification, sexuality, age, religious affiliation and non-affiliation, and spiritual practices.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

### **SSC-240** American Military Conflict: Wars of National Identity

4 credits, Not Offered Every Term

Examines America's wars of national identity, principally the American Revolution and the Civil War. Explores characteristics of such wars, variations over time and space, and shaping influences and impacts on American society and culture, both military and civilian.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**SSC-241 American Military Conflict: Global War**

4 credits, Not Offered Every Term

Examines America as a global power in 20th Century conflicts—World Wars I and II, the Cold War and possible future global conflicts. Explores characteristics of global war, variations over time and space, and shaping influences and impacts on American society and culture, both military and civilian.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**SSC-242 American Military Conflict: Asymmetric Warfare**

4 credits, Not Offered Every Term

Examines America's military experience in asymmetric conflicts from colonial times to the present. Explores characteristics of asymmetric war, variations over time and space, and impacts on American society and culture, both military and civilian.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

## Sociology (SOC)

**SOC-204 Introduction to Sociology**

4 credits, Fall/Winter/Spring/Summer

This course offers an introduction to the field of sociology. Sociology is the scientific study of human behavior in society. In this course we will introduce and discuss issues including the sociological imagination, culture, socialization, deviance, authority, religion, science and methods of sociological research. Various sociological theories will be introduced and utilized to explore and enhance our understanding of these issues.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**SOC-205 Social Stratification & Social Systems**

4 credits, Fall/Winter/Spring/Summer

This course explores the inequality that exists in our society. Social stratification is the unequal distribution of resources and opportunities in a society. Issues like gender, race, poverty, education and capitalism will be explored and discussed in an attempt to understand their impact on the inequality that we experience in our society. Various sociological theories will be introduced and utilized to explore and enhance our understanding of these issues.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**SOC-206 Institutions & Social Change**

4 credits, Fall/Winter/Spring/Summer

This course explores how people can change their society. Social change is a process that can be used by people in a society, to change and improve the functioning of their society. This course will explore and discuss how people-led social movements, in the past and in the present, can be developed, organized, and implemented to accomplish social change.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**SOC-210 Marriage, Family, & Intimate Relations**

4 credits, Fall/Winter/Spring

This course will introduce students to the study of marriage, intimate relations and family systems from the sociological viewpoint. Students will examine the ways in which race, class, gender, sexuality, community, and society influence patterns of courtship, intimate relations, marriage, and family, and explore the various challenges facing families today.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**SOC-225 Social Problems**

4 credits, Fall/Winter/Spring/Summer

Applies the sociological framework to the study of social problems, their identification, analysis of causes and possible solutions. Problems explored may include mental disorders, drug and alcohol addiction, crime and delinquency, group discrimination, inequality, poverty, alienation, domestic and international violence, environment, and energy.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**SOC-280 Sociology/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative Work Experience. This course allows students who are already working in the field of sociology to earn college credit for that work. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

## Spanish (SPN)

**SPN-101 First-Year Spanish I**

4 credits, Fall/Winter/Spring/Summer

First of a three-term foundational, multimedia course for beginners. Initial emphasis is on speaking and listening comprehension, with secondary emphasis on reading and writing. Various cultural themes are presented.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**SPN-102 First-Year Spanish II**

4 credits, Fall/Winter/Spring/Summer

Second of a three-term foundational, multimedia course for beginners. Initial emphasis is on speaking and listening comprehension, with secondary emphasis on reading and writing. Various cultural themes are presented.

Prerequisites: SPN-101

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**SPN-103 First-Year Spanish III**

4 credits, Spring/Summer

Third of a three-term foundational, multimedia course for beginners. Initial emphasis is on speaking and listening comprehension, with secondary emphasis on reading and writing. Various cultural themes are presented.

Prerequisites: SPN-102

**SPN-201 Second-Year Spanish I**

4 credits, Fall

First of a three-term intermediate, multimedia course. Focus is on speaking, listening comprehension, reading and writing. Explores cultural differences among Spanish-speaking countries and between the latter and European-American culture.

Prerequisites: SPN-103 or Student Petition

**SPN-202 Second-Year Spanish II**

4 credits, Winter

Second of a three-term intermediate, multimedia course. Focus is on speaking, listening comprehension, reading and writing. Explores cultural differences among Spanish-speaking countries and between the latter and European-American culture.

Prerequisites: SPN-201

**SPN-203 Second-Year Spanish III**

4 credits, Spring

Third of a three-term, intermediate, multimedia course. Focus is on speaking, listening comprehension, reading and writing. Explores cultural differences among Spanish-speaking countries and between the latter and European-American culture.

Prerequisites: SPN-202



**SPN-211** Intermediate Spanish Conversation

3 credits, Fall

The emphasis of the course is on the continued development of oral proficiency, including expanding vocabulary and broadening the students' cultural awareness of the Spanish-speaking world. The course addresses Spanish vocabulary and expressions related to specific purposes. Purposes vary by term. Grammatical explanations will be kept to a minimum.

Recommended Prerequisites: SPN-203

**SPN-213** Intermediate Spanish Conversation

3 credits, Not Offered Every Term

Continues the improvement of intermediate-level Spanish conversation through the discussion of readings and situations related to selected special topics (which vary from term to term). Spanish culture related to the topics will be included. Simulated role plays are also used to practice conversational strategies for use in real-life situations. The emphasis in this course is in helping students to gain confidence in their communication skills.

Required: Basic knowledge of the Spanish language

Prerequisites: SPN-203 or SPN-211 or Student Petition

## Study Skills (EL)

**EL-103** Taking Effective Notes

1 credits, Not Offered Every Term

Designed to help students develop effective note-taking skills. Several note-taking systems are introduced and practiced.

Prerequisites: WRD-080 or placement in WRD-090

**EL-111** College Study Skills

3 credits, Not Offered Every Term

Emphasizes time management, listening/notetaking, testing skills/anxiety, college resources, learning styles, reading strategies, textbook reading, and concentration skills.

Prerequisites: WRD-080 or placement in WRD-090

## Theatre Arts (TA)

**TA-101** Appreciation of Theatre

4 credits, Fall

Students will be introduced to the many aspects of theatre arts by attending multiple area productions. Plays will be reviewed and evaluated through writing assignments and discussions.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**TA-102** Appreciation of Theatre

4 credits, Winter

Students will be introduced to the many aspects of theatre arts at an intermediate level by attending multiple area productions. Plays will be reviewed and evaluated through writing assignments and discussions.

Recommended Prerequisites: TA-101 and WRD-098 or placement in WR-121Z

**TA-103** Appreciation of Theatre

4 credits, Not Offered Every Year

Students will analyze the many aspects of theatre arts at an advanced level by attending multiple area productions. Plays will be reviewed and evaluated through writing assignments and discussions.

Recommended Prerequisites: WRD-090 or placement in WR-121Z. TA-101 and TA-102

**TA-111** Fundamentals of Technical Theatre

4 credits, Summer/Fall

First class of a three part series. Basic study and practice in the collaborative techniques of mounting various types of productions for presentation. Includes basic principles and techniques in stage design, construction, and lighting. Flexible laboratory sessions available. Students must attend a performance as well as participate in the focus and strike (10 total hours) of a production. Students are required to maintain an independent journal/study (12 total hours) of outside class activity and/or observations of Technical Theatre applications.

**TA-112** Fundamentals of Technical Theatre

4 credits, Winter

Second class of a three-part series. Intermediate study and practice in techniques of mounting various types of productions for presentation. Includes basic principles and techniques in stage design, construction, and lighting. Flexible laboratory sessions available. Students must attend a performance as well as participate in the focus and strike (10 total hours) of a production. Students are required to maintain an independent journal/study (12 total hours) of outside class activity and observations of Technical Theatre applications.

**TA-113** Fundamentals of Technical Theatre

4 credits, Spring

Third class in a three-part series. Advanced study and practice in techniques of mounting various types of productions for presentation. Includes basic principles and techniques in stage design, construction, and lighting. Flexible laboratory sessions available. Students must attend a performance as well as participate in the focus and strike (10 total hours) of a production. Students are required to maintain a journal/study (12 total hours) of outside class activity and observations of Technical Theatre applications.

**TA-121** Costuming I

3 credits, Fall

First in a three-part series. Study and practice in theatrical costuming techniques for various types of live theatrical productions. Students will analyze scripts, research historical background, and study period fashion to develop character wardrobes. This is a project-based course where students will construct and tailor costume and prop pieces for cast members. No experience necessary; limited seats.

**TA-122** Costuming II

3 credits, Winter

Second in a three-part series. Study and practice in theatrical costuming techniques for various types of live theatrical productions. Students will analyze scripts, research historical background, and study period fashion to develop character wardrobes. This is a project-based course where students will construct and tailor costume and prop pieces for cast members. No experience necessary; limited seats.

Recommended Prerequisites: TA-121

**TA-123** Costuming III

3 credits, Spring

Third in a three-part series. Study and practice in theatrical costuming techniques for various types of live theatrical productions. Students will analyze scripts, research historical background, and study period fashion to develop character wardrobes. This is a project-based course where students will construct and tailor costume and prop pieces for cast members. No experience necessary; limited seats.

Recommended Prerequisites: TA-121 or TA-122



**TA-141 Acting I**

4 credits, Fall

Studies the methods, techniques, and theories of acting as an art form. Students perform acting exercises and monologues/scenes from dramatic literature, attend lectures, and participate in work-shopping and discussion. Written work is assigned that includes response and analysis papers. Introduces vocal, physical, and script analysis skills. First in a series.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**TA-142 Acting II**

4 credits, Winter

Further studies the methods, techniques, and theories of acting as an art form. Workshop, discussion, and performance of exercises and monologues/scenes from dramatic literature with written assignments to include response and analysis papers. Intermediate work on vocal, physical, and script analysis skills with special focus on language. Second in a series.

Recommended Prerequisites: TA-141 and WRD-098 or placement in WR-121Z

**TA-143 Acting III**

4 credits, Spring

Further studies the methods, techniques, and theories of acting as an art form. Workshop, discussion, and performance of exercises and monologues/scenes from dramatic literature with written assignments to include response and analysis papers. Advanced work on vocal and physical skills with special focus on character and creation of material. Third in a series.

Recommended Prerequisites: WRD-098, and TA-141 or TA-142

**TA-153 Theatre Rehearsal & Performance**

1-3 credits, Fall/Winter/Spring

Training in theatre production through intensive study and rehearsal of scenes and plays for public performance. Variable Credit: 1-3 credits. May be repeated for up to 6 credits. Required: Student Petition.

Required: Successful audition/interview

Recommended Prerequisites: TA-141 and TA-142, or TA-143; or TA-111 and TA-112, or TA-113

**TA-195 Student Performance Showcase**

1-3 credits, Fall/Winter/Spring

Training in special forms of theatrical presentation through in-class intensive preparation, study, and program development for public presentation, including comedy improvisation, stand-up comedy, and student directed one-act plays. Roles in one-act plays require a successful audition. Other opportunities open to all. Variable Credit: 1-3 credits. May be repeated for up to 6 credits.

**TA-211 Technical Theatre Study**

4 credits, Summer/Fall

Comprehensive study and practice in presentational graphics, scene design, lighting design, and chromatics. The full creative process of staging a production will be explored through aesthetic research and design projects. Includes hands-on participation in CCC's main stage productions.

Prerequisites: TA-111, TA-112, and TA-113

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**TA-212 Technical Theatre Study**

4 credits, Winter

Second class of a three part series. Comprehensive study and practice in presentational graphics, scene design, lighting design and chromatics. The full creative process of staging a production will be explored through aesthetic research and design projects. Includes hands-on participation in CCC's main stage productions. Students must attend a performance as well as participate in the focus and strike (10 total hours) of a production. Students are required to maintain a journal/study (12 total hours) of outside class activities and observing Technical Theatre applications.

Prerequisites: TA-111, TA-112, and TA-113

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**TA-213 Technical Theatre Study**

4 credits, Spring

Third class in a three-part series. Comprehensive study and practice in presentational graphics, scene design, with specific focus in lighting design and chromatics. The full creative process of staging a production will be explored through aesthetic research and design projects. Includes hands-on participation in CCC's main stage productions. Students must participate in the focus, performance and strike (10 total hours) of a production. Students are required to maintain a journal/study (12 total hours) of outside class activity identifying and observing Technical Theatre applications.

Prerequisites: TA-111, TA-112, and TA-113

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**TA-253 Theatre Rehearsal & Performance**

1-3 credits, Fall/Winter/Spring

Intermediate training in theatre production through intensive study and rehearsal of scenes and plays for public performance. Variable Credit: 1-3 credits. May be repeated for up to 6 credits. Required: Student Petition.

Required: Successful audition/interview

Recommended Prerequisites: TA-153

**TA-280 Theatre/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with a learning experience related to course of study and career goal. Major emphasis will be given to on-the-job experience and training. Variable Credit: 2-6 credits. Required: Student Petition.

Corequisites: CWE-281

**TA-295 Student Performance Showcase**

1-3 credits, Fall/Winter/Spring

Training in special forms of theatrical presentation through in-class intensive preparation, study, and program development for public presentation, including comedy improvisation, stand-up comedy, and student directed one-act plays. Roles in one-act plays require a successful audition. Other opportunities open to all. Variable Credit: 1-3 credits. May be repeated for up to 6 credits.

## Water & Environmental Technology (WET)

**WET-010 Wastewater Operations I**

3 credits, Fall

For professional upgrade only. Does not meet the requirements for the college certificate or the associates of science degree. Introduction to the fundamentals of wastewater operations. Includes collections systems, preliminary and primary treatment, waste characteristics including organic removals, and solids profiles.

**WET-011 Waterworks Operations I**

3 credits, Fall

For professional upgrade only. Does not meet the requirements for the certificate or degree. Introduction to municipal drinking water treatment and distribution systems. Basic waterworks hydraulics, drinking water regulations, waterworks math, waterworks microbiology, and introduction to water disinfection.

**WET-020 Wastewater Operations II**

3 credits, Winter

For professional upgrade only. Does not meet the requirements for the certificate or degree. Secondary wastewater treatment alternatives with municipal application. Fixed and suspended film systems and clarification process. Includes biological sludge treatment.

Prerequisites: WET-010

**WET-021 Waterworks Operations II**

3 credits, Winter

For professional upgrade only. Does not meet the requirements for the certificate or degree. Basic hydrology, ground water and surface water sources, well construction and operation, introduction to water chemistry, waterworks hydraulics, and fundamentals of pumps and pumping.

**WET-030 Wastewater Operations III**

3 credits, Spring

For professional upgrade only. Does meet the requirements for the certificate or degree. Design, operation, process control and maintenance of treatment facilities. Current treatment processes discussed in detail with particular attention given to biological sludge handling process. No lab requirement for this course.

Prerequisites: WET-020

**WET-031 Water Treatment**

3 credits, Spring

For professional upgrade only. Does not meet the requirements for the certificate or degree. Design, operation and process control of water treatment plants. Includes water chemistry, related math, coagulation, sedimentation, filtration and disinfection procedures. Review for Oregon Operator certification exams. No lab requirement for this course. Lab includes field trips to local water treatment facilities.

**WET-108 Cross-Connection Control Program Specialist**

3 credits, Fall/Winter/Spring/Summer

Specialized training for those who want to be involved in administering cross-connection control programs. Elements of a cross-connection control program, basic hydraulics, state specific regulations, identifying possible cross-connections and site surveys in order to determine proper type of backflow protection, if needed.

**WET-109 Backflow Assembly Operation and Testing**

4 credits, Fall/Winter/Spring/Summer

Lecture course with lab component that focuses on backflow assembly hydraulics, operations, installation, and testing.

**WET-110 Wastewater Operations I**

3 credits, Fall

Introduction to the fundamentals of wastewater character and operations. Includes collections systems, preliminary and primary treatment, waste characteristics including organic removals, and solids profiles.

Corequisites: MTH-082A

**WET-111 Waterworks Operations I**

3 credits, Fall

Introduction to municipal drinking water treatment and distribution systems. Basic waterworks hydraulics, drinking water regulations, waterworks math, waterworks microbiology, and introduction to water disinfection.

Corequisites: MTH-082B

**WET-112 Computer Applications for Water and Wastewater Operations**

4 credits, Fall

Focuses on direct application of Microsoft Word, PowerPoint, and Excel for producing compliance reports, professional presentations, and data analysis. Emphasis will be put on the use of Excel for statistical analysis of water and wastewater plant data for state and federal compliance. Supervisory control and Data Acquisition (SCADA) will also be covered. Wastewater simulators will be explored and used to design and manipulate unit processes.

Corequisites: WET-110 and WET-111

**WET-120 Wastewater Operations II**

3 credits, Winter

Secondary wastewater treatment alternatives with municipal application. Fixed and suspended film systems with the associated clarification process will be presented.

Prerequisites: WET-110

Corequisites: MTH-082C

**WET-121 Waterworks Operations II**

3 credits, Winter

An introduction to water distribution, with a focus on water regulations, operator math, water chemistry, and specific water distribution processes. Also examines distribution system design, water mains, hydrants and valves, water pumps, water system supply security, and public relations. Everything you need to know to pass the water distribution grade 1 state certification.

Prerequisites: WET-111

Corequisites: MTH-082D

**WET-122 Water Distribution and Wastewater Collection Systems**

3 credits, Winter

Elementary engineering aspects of water distribution and wastewater collection systems. System components, construction materials, pump station design, maintenance, operations, and other related topics.

Prerequisites: WET-110

Corequisites: WET-120

**WET-123 Environmental Chemistry I**

3 credits, Winter

Theory and applied laboratory techniques for testing water and wastewater. Students will test wastewater for NPDES required tests.

Corequisites: WET-123L

**WET-125 High Purity Water Production I**

3 credits, Fall

Fundamentals of high purity water chemistry, reverse osmosis treatment, ion exchange treatment, electrode ionization treatment, UV, ozonation, degasification and microfiltration as applied to the production of high purity water for the semiconductor, pharmaceutical and electric power generating industries.

Corequisites: MTH-082E

**WET-130 Wastewater Operations III**

4 credits, Spring

Design, operation, process control and maintenance of treatment facilities. Current treatment processes discussed in detail with particular attention given to biological sludge treatment, and handling processes. Lab includes field trips to local wastewater facilities.

Prerequisites: WET-120

Corequisites: WET-130L

**WET-130L Wastewater Operations III Lab**

0 credits, Spring

The course is devoted to comprehension of the wastewater treatment process via weekly exploration of a wastewater treatment plant. We will tour a treatment plant and then go over the treatment process in lecture.

We will emphasize emerging wastewater technologies, (nitrification/denitrification), sludge and bio-solids management, volatile solids reduction through the digestion (aerobic and anaerobic) processes, sludge/solids processing, solids handling, and ultimate waste solids disposal. Fundamental principles of emerging wastewater treatment process, solids handling, including disinfection and dechlorination of wastewater will be emphasized.

Prerequisites: WET-110 and WET-120

Corequisites: WET-130

**WET-131 Water Treatment**

4 credits, Spring

Design, operation and process control of water treatment plants. Includes water chemistry, related math, coagulation, flocculation, sedimentation, filtration and disinfection procedures. Review for Oregon Operator grade 1 certification exams. Lab includes field trips to local water treatment facilities.

Prerequisites: WET-121

Corequisites: WET-131L

**WET-131L Water Treatment Lab**

0 credits, Spring

Lab Course for WET-131. Must be taken concurrently with WET-131.

Prerequisites: WET-121

Corequisites: WET-131

**WET-132 Collection & Distribution Lab**

1 credits, Spring

Field exposure to water distribution systems and wastewater collection systems. Weekly field visits include inspection of cross-connection inspection, distribution valving, reservoirs, water metering/repair, pumping station operations, smoke testing, and CCTV.

**WET-134 Environmental Chemistry II**

3 credits, Spring

Water quality testing, monitoring and reporting. The course includes the theory and application of common water quality tests for surface water, groundwater, and storm water monitoring systems. The course also covers all water quality tests for ensuring correct water treatment processes.

Prerequisites: WET-123

**WET-135 High Purity Water Production II**

4 credits, Winter

A lab course focusing on the operation of equipment and unit processes in the production of high purity water. Emphasis on process equipment sizing and design, process control and troubleshooting.

Prerequisites: WET-125 and MTH-082E

**WET-180 Water & Environmental Projects I**

1-5 credits, Spring

Practical work experience in a municipal industrial treatment, distribution, or collection system. Placement in consulting firms, federal and state regulatory agencies, BLM, BPA, and other regulated governmental organizations. Variable Credit: 1-5 credits.

Corequisites: CWE-281

**WET-241 Aquatic Microbiology**

4 credits, Fall

A lab course with topics in applied microbiology. Methods to detect coliform group in water and wastewater. Identification of filamentous bacteria in activated sludge, and identification of indicator protozoa in activated sludge. A bacteriological stream survey project is included.

Prerequisites: BI-204

**WET-242 Hydraulics for Water & Wastewater**

3 credits, Fall

Introduction to closed conduit and open channel flow. Includes hydrostatics and dynamics, head-loss, pump characteristics, Bernoulli's and the energy equations, and basic characteristics of water.

Prerequisites: WET-122

**WET-245 Instrumentation & Control**

4 credits, Fall

A lab course introducing methods used to monitor and control treatment processes in wastewater, water and high purity water facilities. Advanced water analysis to include typical monitoring of high purity water treatment. Fundamentals of control loops, control systems and data management.

**WET-280 Water & Environmental Projects II**

5 credits, Fall

Practical work experience in a municipal industrial treatment, distribution, or collection system. Placement in consulting firms, federal and state regulatory agencies, BLM, BPA, and other regulated governmental organizations. Practical experience in a municipal, public or private wastewater treatment facility of specific activated sludge design.

Process loading criteria, data acquisition & trend charting, and relevant sanitary process strategies will be addressed.

Corequisites: CWE-281

## Welding Technology (WLD)

**WLD-100 Welder's Print Reading I**

3 credits, Fall/Winter

Provides instruction in reading and interpretation of prints and symbols common in the welding industry. Participants will learn the interpretation and application of basic lines, dimensions, structural shapes, and specifications. Welding symbols and their application to different types of joint configurations will be covered, as well as how to develop basic shop drawings and prints.

**WLD-102 Introduction to Welding**

2 credits, Fall/Winter/Spring

Designed for the beginner and experimental welder. Includes: oxy-acetylene cutting and welding, SMAW (Shielded Metal Arc Welding), GMAW & FCAW (Gas Metal Arc Welding & Flux Core Arc Welding) and GTAW (Gas Tungsten Arc Welding) and plasma arc cutting.

**WLD-102ES** Introducción a la Soldadura

2 credits, Fall/Winter

Diseñado para soldaderos principantes y experimental. Incluye corte y soldadura oxiacetileno, soldadura por arco de metal blindado (SMAW), la soldadura de arco de metal y gas (GMAW) y Soldadura por Arco con Nucleo de Fundente (FCAW) y soldadura por arco de gas tungsteno (GTAW) y corte por plasma.

**WLD-103** Blacksmithing & Traditional Iron Working

2 credits, Fall/Winter/Spring

This course introduces the student to basic blacksmithing techniques and processes, as well as terminology, steel types, heat treating and tool making. Multiple projects allow the student to practice the varied methods of manual metal forming. No welding experience required.

**WLD-104** Introduction to CNC Plasma Cutting

2 credits, Not Offered Every Term

Introduces the student to the basics of CNC plasma cutting. Participants will learn set-up and operation procedures for plasma machines and how to operate CNC controller software. Two-dimensional wire frame geometry creation and programming will be used to create projects. This course is recommended for anyone interested in CNC plasma cutting for industry applications or artwork.

**WLD-110** Welder Certification

4 credits, Fall/Winter/Spring/Summer

This course provides theory and practical instruction to become a certified welder. Students will choose a welding process (flux core arc welding, shielded metal arc welding, or gas tungsten arc welding) for certification. Material needed for practice welding will be provided. Students will take a welding certification exam at the end of the class. May be repeated for up to 12 credits.

**WLD-111** Shielded Metal Arc Welding (Stick)

8 credits, Not Offered Every Term

Provides students with the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet and groove welds in all positions with the SMAW process. Oxy-fuel cutting, air carbon arc cutting and gouging will be covered. Welding codes, standards, and specifications will be reviewed.

**WLD-111A** Shielded Metal Arc Welding (Stick)

4 credits, Not Offered Every Term

The first half of WLD-111 which provides the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet welds in flat and horizontal positions with the SMAW process. Oxy-fuel cutting, air carbon arc cutting and gouging will be covered.

**WLD-111B** Shielded Metal Arc Welding (Stick)

4 credits, Not Offered Every Term

The second half of WLD-111 which provides the opportunity to acquire additional knowledge and skills needed to perform more advanced fillet and groove welds in vertical and overhead positions with the SMAW process. Welding codes, standards, and specifications will be reviewed. Prerequisites: WLD-111A

**WLD-113** Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)

8 credits, Not Offered Every Term

Provides students with the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet and groove welds in all positions with the Gas Metal Arc and Flux Core Arc Welding processes. Oxy-fuel cutting, and air carbon arc cutting and gouging will be covered. Welding codes, standards and specifications will be reviewed.

**WLD-113A** Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)

4 credits, Not Offered Every Term

The first half of WLD-113 which provides the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet welds in flat and horizontal positions with the Gas Metal Arc and Flux Core Arc Welding processes. Oxy-fuel cutting, air carbon arc cutting and gouging will be covered.

**WLD-113B** Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)

4 credits, Not Offered Every Term

The second half of WLD-113 which provides the opportunity to acquire additional knowledge and skills needed to perform more advanced fillet and groove welds in vertical and overhead positions with the Gas Metal Arc and Flux Core Arc Welding processes. Welding codes, standards, and specifications will be reviewed.

Prerequisites: WLD-113A

**WLD-115** Gas Tungsten Arc Welding (GTAW)

8 credits, Not Offered Every Term

Provides students with the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet and groove welds in all positions with the Gas Tungsten Arc Welding process. Plasma arc cutting will be covered. Welding codes, standards, and specifications will be reviewed.

**WLD-115A** Gas Tungsten Arc Welding (GTAW)

4 credits, Not Offered Every Term

The first half of WLD-115 which provides the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet welds in flat and horizontal positions with the Gas Tungsten Arc Welding (GTAW) process. Plasma arc cutting will be covered.

**WLD-115B** Gas Tungsten Arc Welding (GTAW)

4 credits, Not Offered Every Term

The second half of WLD-115 which provides the opportunity to acquire additional knowledge and skills needed to perform more advanced fillet and groove welds in vertical and overhead positions with the Gas Tungsten Arc Welding process. Welding codes, standards, and specifications will be reviewed.

Prerequisites: WLD-115A

**WLD-150** Welding Processes

4 credits, Fall/Winter/Spring/Summer

Covers oxy-fuel welding, brazing, cutting, SMAW (Shielded Metal Arc Welding), GMAW & FCAW (Gas Metal Arc Welding & Flux Core Arc Welding) and GTAW (Gas Tungsten Arc Welding) and plasma arc cutting and plasma cutting. This course includes safety, electrical fundamentals, routine maintenance, minor repairs, and welding terms and definitions.

**WLD-200** Welder's Print Reading II

3 credits, Not Offered Every Term

Provides instruction in reading and interpretation of prints and symbols common in welding industry. Participants will learn interpretation and application of blueprint views. Includes basic layout techniques and math review. American Welding Society symbols, International Standards Organization symbols, pipe welding symbols, and inspection symbols are covered.

Prerequisites: WLD-100

**WLD-203** Blacksmithing & Traditional Iron Working II

2 credits, Fall/Winter/Spring

This course builds on the WLD-103 course and expands on the process of forged metal work. Instruction includes power hammer use, tooling design, traditional joinery, and intermediate projects. Welding experience helpful, but not required.



**WLD-210** Pipe Welding

4 credits, Fall/Winter/Spring

Provides beginning theory and practical instruction in the Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Flux Core Arc Welding (FCAW), or Gas Tungsten Arc Welding (GTAW) processes on steel plate and pipe. The specific projects include: stringer beads, fillet and groove welds on plate with root and cover proficiency, pipe cutting using the oxy-fuel process, pipe beveling and groove welds on pipes in all positions. The student may choose which process or processes will be used to complete the lab assignments.

Prerequisites: WLD-111, or WLD-111A and WLD-111B. WLD-113, or WLD-113A and WLD-113B. WLD-115, or WLD-115A and WLD-115B. WLD-150 or prior experience in SMAW, GMAW, FCAW, or GTAW

**WLD-211** Advanced Shielded Metal Arc Welding

4 credits, Not Offered Every Term

This course provides the opportunity for students to acquire the knowledge and skills needed to perform quality fillet and groove welds in all positions using the Shielded Metal Arc Welding (SMAW) process. Advanced welding theory and procedures will also be included.

Prerequisites: WLD-111; or WLD-111A and WLD-111B

**WLD-212** Shielded Metal Arc Welding Pipe Welding

4 credits, Not Offered Every Term

This class is designed to teach students the fundamentals of open root pipe welding. Theory and practical instruction in open root V groove pipe welding using E6010 and E7018 electrodes will be provided. Oxy-fuel pipe cutting is also included. Required: Student Petition.

Prerequisites: WLD-211

**WLD-213** Advanced Gas Metal Arc Welding/Flux Core Arc Welding

4 credits, Not Offered Every Term

This course provides the opportunity for students to acquire the knowledge and skills needed to perform quality fillet and groove welds in all positions using the Gas Metal Arc Welding (GMAW) and Flux Core Arc Welding (FCAW) processes. Advanced welding theory and procedures will also be included.

Prerequisites: WLD-113; or WLD-113A and WLD-113B

**WLD-215** Advanced Gas Tungsten Arc Welding

4 credits, Not Offered Every Term

This course provides the opportunity for students to acquire the knowledge and skills needed to perform quality fillet and groove welds in all positions using the Gas Tungsten Arc Welding (GTAW) process. Advanced welding theory and procedures will also be included.

Prerequisites: WLD-115; or WLD-115A and WLD-115B

**WLD-250** Welding Fabrication I Beginning Project

4 credits, Not Offered Every Term

This course consists of lecture and lab and provides instruction in fabrication techniques including blueprint reading, layout, sketching, bills of material, job cost calculations, measuring, fitting, cutting and welding. Students will be assigned beginning fabrication projects. The student will be responsible for all aspects of managing the project to successful completion.

Prerequisites: WLD-111, WLD-113, or WLD-115

**WLD-251** Welding Fabrication II Intermediate Project

4 credits, Not Offered Every Term

This course consists of lecture and lab. Students will use the skills learned in Fabrication I, such as blueprint reading, layout, sketching, bills of materials, job cost calculations, measuring, fitting, cutting and welding, and apply them to more challenging projects. Students will be assigned intermediate fabrication projects. The student will be responsible for all aspects of managing the project to successful completion.

Prerequisites: WLD-250

**WLD-252** Welding Fabrication III Advanced Project

4 credits, Not Offered Every Term

This course consists of lecture and lab. Students will use the skills learned in Fabrication I and II, such as blueprint reading, layout, sketching, bills of materials, job cost calculations, measuring, fitting, cutting and welding, and apply them to advanced projects. Students will be assigned advanced fabrication projects. The student will be responsible for all aspects of managing the project to successful completion.

Prerequisites: WLD-251

**WLD-261** Welding Special Projects

1-2 credits, Fall/Winter/Spring/Summer

Allows students to improve their welding skills while working on instructor-approved projects. Variable Credit: 1-2 credits. May be repeated for up to 12 credits.

**WLD-280** Welding Technology/CWE

1-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience in the welding trades. Worksite to be determined prior to registering for this class. Skills learned from welding classes will be applied while working at a job site. Goals for this class will be established with the company supervisor, instructor, and student. An online seminar is also required to complete this course. Variable Credit: 1-6 credits. May be repeated for up to 9 credits. Required: Student Petition.

Corequisites: CWE-281

## Women's Studies (WS)

**WS-101** Introduction to Women's Studies

4 credits, Fall/Winter/Spring/Summer

Examines the history of the representation of women, the history of US feminism and the development of Women's Studies as an academic discipline. Critically explores social issues relevant to women's lives, including gender-expression, marginalization, reproduction, sexuality, economic status and the experience of violence.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

## Workshop: Citizen Preparation (XCIV)

**XCIV-0001** Citizenship Preparation

0 credits, Fall/Winter/Spring/Summer

Prepares students to pass the oral exam for U.S. citizenship. Students study U.S. history, government, citizens' rights and responsibilities, and U.S. symbols independently through a self-paced, online distance learning course, and periodic meetings with the Volunteer Tutor Coordinator, taking quizzes after completing separate modules.



## Workshop: Theatre Arts (XATH)

### **XATH-0001** Plays & Rehearsals

0 credits, Fall/Winter/Spring/Summer

Training in theatre production through intensive study and rehearsal of scenes and plays for public performance.

### **XATH-0002** Stagecraft

0 credits, Fall/Winter/Spring/Summer

Training in special forms of theatrical presentation through in-class intensive preparation, study and program development for public presentation to the community.

## Workshop: Water & Environmental Technology (XWET)

### **XWET-C001** 1-Day Cross Connection Specialist Update

Not Offered Every Term

Update on code information or any changes in the program.

### **XWET-C002** 1-Day Tester Renewal

Not Offered Every Term

Update on OARs and hands on testing to recertify student for backflow assembly certification through the State of Oregon.

### **XWET-C003** 2-Day Tester Retrain/Renewal

Not Offered Every Term

Review of backflow prevention assemblies used for water/wastewater system cross connection control. Review will include overview of hydraulics and degree of hazards, proper backflow installation procedures, and approved testing/troubleshooting procedures. Students will learn to identify common, actual, and potential cross connection hazards; students will be introduced to the basic requirements for carrying out a cross connection program. Upon successful hands on and written exam completion, students will be issued certificate of completion by OBT/CCC and transcribed for appropriate number of CEUs. Students will be able to apply to Oregon Health Department for recertification by that agency.

### **XWET-C004** 4-Day Cross Connection Specialist Course

Not Offered Every Term

Designed to provide information to individuals involved in the protection of public water systems from contamination due to cross connections. This course should be of special interest to cross connection control specialists, plumbing inspectors, waterworks managers, and backflow device testers.

### **XWET-C005** 5-Day Backflow Tester Course

Not Offered Every Term

Presentation of backflow prevention assemblies used for water/wastewater system cross connection control. Class will include overview of hydraulics and degree of hazards, proper backflow installation procedures, and approved testing/troubleshooting procedures. Students will learn to identify common, actual, and potential cross connection hazards; students will be introduced to the basic requirements for carrying out a cross connection program. Students will be able to apply to Oregon Health Authority for Certification by that agency.

### **XWET-C007** Water Environment School

Not Offered Every Term

Offerings include: Management & Supervision, Basics, Health & Safety, Technology, Operations, Distribution & Maintenance, Lab, Biosolids, Source Control.

### **XWET-C008** Waterworks School

Not Offered Every Term

Offerings include: Management and Supervision, Water Quality and Treatment, Distribution and Maintenance, Waterworks Basics, Customer Service and Safety.

### **XWET-C010** Wastewater Collections and Treatment 4-Day ABC Licensure

Exam Preparatory Course Levels 1-4

Not Offered Every Term

Review topics included on the State of Oregon Waste Water Operator Exams.

## Workshop: Welding (XWLD)

### **XWLD-0001** American Welding Society (WLD) Certification 1 Plate Test

0 credits, Fall/Winter/Spring/Summer

Welder certification in accordance with AWS D1.1 for one position for students enrolled in any CCC welding course.

### **XWLD-0002** American Welding Society Certification 2 Plate Or 1 Pipe Test

0 credits, Fall/Winter/Spring/Summer

Welder certification in any two positions, in accordance with AWS D1.1 for students enrolled in any CCC welding course.

### **XWLD-0003** American Welding Society Certification Retake Test

0 credits, Fall/Winter/Spring/Summer

Welder certification on retest in any position, in accordance with AWS D1.1 for students enrolled in any CCC welding course. Required: Student Petition.

## Writing (WR)

### **WR-101** Workplace Writing

4 credits, Fall/Winter/Spring/Summer

Students in this course learn and practice basic modes of technical writing, including summaries, process analysis, instructions, and reports. Prerequisites: WRD-098 or placement in WR-101 or WR-121Z

### **WR-121Z** Composition I

4 credits, Fall/Winter/Spring/Summer

WR-121Z engages students in the study and practice of critical thinking, reading, and writing. The course focuses on analyzing and composing across varied rhetorical situations and in multiple genres. Students will apply key rhetorical concepts flexibly and collaboratively throughout their writing and inquiry processes.

Prerequisites: WRD-098 or placement in WR-121Z

### **WR-122Z** Composition II

4 credits, Fall/Winter/Spring/Summer

WR-122Z builds on concepts and processes emphasized in WR-121Z, engaging with inquiry, research, and argumentation in support of students' development as writers. The course focuses on composing and revising in research-based genres through the intentional use of rhetorical strategies. Students will find, evaluate, and interpret complex material, including lived experience; use this to frame and pursue their own research questions; and integrate material purposefully into their own compositions.

Prerequisites: WR-121Z with a C or better

**WR-124ES** Escritura de ensayos de nivel universitario en español  
4 credits, Fall/Winter

Este curso ofrece una introducción al ensayo académico. El alumnado aprenderá un proceso de escritura y redacción: desde cómo hacer una «lluvia de ideas» para generar ideas hasta cómo corregir e editar un escrito. A la vez, se desarrollarán respuestas originales-en forma escrita-a reseñas y reportajes sobre temas controversiales y a los ensayos académicos difíciles. La clase enfatizará la alfabetización de la información, así como: cómo encontrar y evaluar materiales, recursos relevantes y obras originales; cómo integrarlos en una redacción académica y cómo citarlos.

Required: Los y las estudiantes deben leer y escribir a nivel universitario, en español, antes de comenzar el curso

Prerequisites: WRD-098 o ubicación en WR-121Z

**WR-127** Scholarship Essay Writing

1 credits, Fall/Winter

Introduces scholarship resources and the application process. Examines and applies the concept of 'telling the story of me,' and drafting, revising, and editing a complete scholarship application essay.

**WR-128** Introduction to APA Style & Documentation

1 credits, Fall/Winter

Introduces American Psychological Association (APA) style and documentation, including document format, in-text citation, and references page. Includes style and documentation for narrative and academic papers. Students will work with provided sources. Recommended for pre-nursing and nursing students, allied health students, and STEM and social science students.

Prerequisites: WR-121Z with a C or better

**WR-140** Introduction to Writing Creatively

4 credits, Summer/Fall/Winter

Guides students through the discussion and practice of writing creatively in many genres and formats, primarily poetry, fiction, drama, and creative non-fiction in a workshop format. May also include screenwriting, digital story telling, film, and performance genres.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**WR-222** English Composition

4 credits, Not Offered Every Year

A course in writing university-level research papers and pursuing lifelong learning through advanced research. Students continue to develop their information and research literacy by carrying out inquiry-driven research; this involves a variety of research skills and tools and an emphasis on locating, assessing, and working with college library resources.

Prerequisites: WR-122Z

**WR-227Z** Technical Writing

4 credits, Fall/Winter/Spring/Summer

WR-227Z introduces students to producing instructive, informative, and persuasive technical/professional documents aimed at well-defined and achievable outcomes. The course focuses on presenting information using rhetorically appropriate style, design, vocabulary, structure, and visuals. Students can expect to gather, read, and analyze information and to learn a variety of strategies for producing accessible, usable, reader-centered deliverable documents that are clear, concise, and ethical.

Prerequisites: WR-121Z with a C or better

**WR-240** Creative Nonfiction Writing I

4 credits, Not Offered Every Term

Techniques of writing and analyzing types of creative nonfiction such as literary journalism, memoirs, nature or science writing, travel writing, and personal essays.

Prerequisites: WRD-098 or placement in WR-121Z

**WR-241** Fiction Writing I

4 credits, Fall/Winter

Introduction to the theory, art and creative practice of fiction writing, with specific emphasis on short prose forms.

Prerequisites: WRD-098 or placement in WR-121Z

**WR-242** Poetry Writing I

4 credits, Fall/Winter

Provides the basic skills for writing and revising poems following contemporary trends in form and content; provides a supportive environment and the critical abilities to read and discuss poems confidently.

Prerequisites: WRD-098 or placement in WR-121Z

**WR-243** Playwriting I

4 credits, Not Offered Every Term

Designed for students who wish to be introduced to the craft of playwriting, including the art of dialogue and the elements of dramatic structure. May be repeated for up to 8 credits.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**WR-244** Fiction Writing II

4 credits, Spring

For students with previous writing experience who wish to learn advanced techniques in the theory, art and creative practice of fiction writing. Specific emphasis on the creation and revision of short prose forms, with focused attention on their publication and distribution.

Prerequisites: WR-241

**WR-245** Poetry Writing II

4 credits, Spring

For students with writing experience who wish to learn advanced techniques of writing poetry, including developing voice and style and exploring publishing.

Prerequisites: WR-242

**WR-246** Editing & Publishing

4 credits, Winter

This course is for students with an interest in creative writing and/or literary journal design, layout, and publication who wish to develop editing and publishing skills. Students work collaboratively as editors to contribute to the production of a literary journal. May be repeated for up to 8 credits.

Prerequisites: WRD-098 or placement in WR-121Z

**WR-247** Playwriting II

4 credits, Not Offered Every Term

This course will continue to cover the narrative and dramatic techniques begun in Introduction to Playwriting. Students will create and workshop a one-act play, and explore avenues for future production. May be repeated for up to 8 credits.

Prerequisites: WR-243 or Student Petition

**WR-248** Bookmaking: Design and Layout

4 credits, Fall

This course covers the design and layout process to produce and publish manuscripts in book form. It includes basic design theory and the step-by-step process for laying out a manuscript using professional design software. Students will also learn how to submit publishable files for print-on-demand. May be repeated for up to 8 credits.

Prerequisites: WRD-098 or placement in WR-121Z

**WR-250** Book Promotion

4 credits, Spring

The purpose of this course is to understand the role of marketing in book publishing, and to develop the necessary skills to create promotional materials including marketing plans, tip sheets, press releases, and collateral.

Prerequisites: WRD-098 or placement in WR-121Z

**WR-262** Introduction to Screenwriting

4 credits, Fall/Spring

Explores the fundamentals of screenplay composition through the use of various writing exercises and workshop techniques. Discussion of dramatic structure and the elements of good storytelling. May be repeated for up to 8 credits.

Prerequisites: WRD-098 or placement in WR-121Z

**WR-263** Screenwriting II

4 credits, Not Offered Every Year

This course offers an expansion of fundamental skills initiated in Introduction to Screenwriting. Students will construct a feature-length screenplay, further develop their critical response skills through peer editing and review, and seek options for production of their work. May be repeated for up to 8 credits.

Prerequisites: WR-262 or Student Petition

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**WR-265** Digital Storytelling

4 credits, Winter

Digital Storytelling is a contemporary expression of the ancient art of storytelling. In this class students will write and create unique digital first person narratives using cloud-based editing tools, photographic and film images, music, and voice. Students will further become active participants in both local and global communities of storytellers.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

**WR-268** Creative Nonfiction Writing II: Nature Writing

4 credits, Not Offered Every Term

Explores topics having to do with nature and the environment. Using a workshop format, students will develop the technique of nature writing, focusing on literary journalism, memoir, personal essay, travel writing, and poetry.

Prerequisites: WRD-098 or placement in WR-121Z

**WR-270** Creative Nonfiction Writing II: Food Writing

4 credits, Fall

Learn to write uniquely and powerfully about food, from recipes to reviews to personal narrative. Bring the pen to the plate and vice versa, enriching your appreciation for sustenance and sentences at the same time.

Recommended Prerequisites: WRD-098 or placement in WR-121Z

## Writing-Reading Skills (WRD)

**WRD-080** Reading/Writing Prep 2

4 credits, Fall/Winter/Spring

This is the second foundational course for developing reading and writing skills. Students will develop secondary reading and writing skills by increasing habits of mind and building additional strategies to improve skills. Students will read from a broad range of texts, including introductory academic and popular literary texts, and write in an organized, structured manner that demonstrates attention to purpose, context and thought. May be repeated for up to 12 credits.

**WRD-090** Introductory College Reading & Writing 1

4 credits, Fall/Winter/Spring/Summer

Students discuss a variety of short, pre-college-level readings, and learn a process for developing their own paragraphs and very short essays (up to two pages). Other topics include becoming an independent reader, summarizing, and writing academically.

Prerequisites: Placement in WRD-090

**WRD-098** Introductory College Reading & Writing 2

4 credits, Fall/Winter/Spring/Summer

Preparation for writing in college-level courses. Students discuss a variety of early-college-level readings, and develop and refine their own essays (up to three pages) through a process of revision and multiple drafts. Other topics include becoming a confident reader, finding and using information, and giving credit to sources through informal citations.

Prerequisites: WRD-090 or placement in WRD-098

**WRD-098ES** Introducción a la lectura y escritura de nivel universitario 2

4 credits, Not Offered Every Term

Preparación para la escritura a nivel de cursos universitarios. El alumnado dialogará sobre una variedad de lecturas, en español, a nivel introductorio o pre-universitario, desarrollarán y perfeccionarán sus ensayos (máximo de tres páginas) por medio del proceso de revisión y múltiples bosquejos. Otros temas incluyen: tener confianza como lector, buscar y encontrar información, y citar las fuentes por medio de citas informales.

Prerequisites: WRD-090 o ubicación en WRD-098

## Zoology (Z)

**Z-201** General Zoology

4 credits, Fall

A lab course offering cellular and molecular basis of animal life including genetics, embryology, evolution, systematics, and protozoan diversity.

Prerequisites: MTH-095 or placement in MTH-111Z

Recommended Prerequisites: WRD-098 or placement in WR-121Z

Corequisites: Z-201L

**Z-202** General Zoology

4 credits, Winter

A lab course covering the maintenance of the cellular, tissue, & organ levels of invertebrates, evolution of animal systems and the diversity of the invertebrate animal phyla.

Prerequisites: MTH-095 with a C or better or placement in MTH-111Z

Recommended Prerequisites: WRD-098 or placement in WR-121Z

Corequisites: Z-202L

**Z-203** General Zoology

4 credits, Spring

A lab course covering diversity of the more complex invertebrate and vertebrate animal phyla. Includes animal anatomy/physiology, animal behavior, distribution, ecology and conservation.

Prerequisites: MTH-095 with a C or better or placement in MTH-111Z

Recommended Prerequisites: WRD-098 or placement in WR-121Z

Corequisites: Z-203L

# FACULTY AND ADMINISTRATION

## Clackamas Community College Board of Education

Board Member	Term Ends
Chris Groener	2023
Wade Hathhorn	2025
Irene Konev	2025
Karin Power	2023
Jane Reid	2025
Rob Wheeler	2025
Aaron Woods	2025

## Clackamas Community College President

Dr. Tim Cook

## Faculty & Administration

Albers, Richard (2008)

Computer Science

MS University of Arkansas

BS University of Arkansas

AAS Parkland Community College

Allen, Paul (2022)

Director, Recruitment and Admissions

MA Portland State University

Anderson, Jennifer (2018)

Associate Dean, Enrollment and Student Services

EdD Portland State University

Bare, Dustin (2011)

Director, Student Academic Support Services

MA Concordia University

Bates, Dustin (2014)

Welding

AAS Clackamas Community College

Blackwell, Ernest "Tory" (2012)

Biology

PhD University of Illinois at Chicago

BS University of Illinois at Chicago

Boone, Katrina (2019)

Associate Dean, Institutional Effectiveness and Planning

MS East Carolina University

Bostrom, Gregory (2010)

Physics

PhD Portland State University

MS University of Illinois at Chicago

MS Portland State University

BS Northwest Missouri State University

Bown, Jennifer (2003)

Science

MS University of Nevada, Reno

BS University of Nevada, Reno

Brennan, Kelly (1996)

Communication Studies

PhD Capella University

MA Washington State University

BS Portland State University

AA/AS Clackamas Community College

Brodnicki, Nora (1999)

Art

MA Syracuse University

MFA State University of New York

at New Paltz

BA Hartwick College

Bryant-Trerise, James (1998)

English

MA Claremont Graduate School

BA University of California

Buel, Jessica (2014)

Head Softball Coach

Health, Physical Education & Athletics

MA Western Oregon University

BS Western Oregon University

Burgess, George (2015)

Chemistry

MS Western Washington University

MS Oregon State University

Burnell, Carol (2004)

English

MA Portland State University

BA San Francisco State University

Burney, Armetta (2022)

Dean of Technology, Applied Sciences, and Public Services

MBA Cardinal Stritch University

Burt, Christina (2023)

Nursing

MSN Colorado Technical University

BSN Colorado Technical University

AAS Clackamas Community College

Caldera, Susan "Sue" (2004)

Welding Technology

AWS Certified Worker

AWS Certified Welding Inspector

AWC Certified Welding Educator

Welding Certificate, Mt Hood

Community College

Campbell, Lars (2013)

Music

MM Portland State University

BM Portland State University

Campbell, Robert "Rob" (2012)  
 Director, Small Business Development Center  
 BS Marylhurst University  
 AS Clark Community College

Cannata, Amy (2018)  
 Director, Grants Development  
 MS University of Oregon  
 BS University of Oregon

Carino, Debra (2001)  
 Computer Science  
 MS California State University  
 BA Boston University

Carino, Enrique (2007)  
 Computer Science  
 BS Portland State University

Carney, Elizabeth (2016)  
 Assessment Coordinator  
 PhD Arizona State University

Cavaliere, Emily (2021)  
 Science  
 PhD University of Sackatchewan

Chambers, Virginia (2021)  
 Director, Health Sciences  
 MA University of Phoenix

Chastain, April (2015)  
 Horticulture  
 MURP Portland State University  
 BS North Carolina State University

Cochran, Paul "Bob" (2010)  
 Dean, Campus Services  
 BS Portland State University

Coffey, Amanda (1998)  
 English  
 MFA Arizona State University  
 BA Virginia Commonwealth University

Cole, Elizabeth (2021)  
 Director, Business Services

Connell, Virginia (2022)  
 Nursing  
 MSN University of Portland  
 BSB University of Portland

Cortes, Juan (2022)  
 Counseling  
 ME North Carolina State University  
 BA University of California

Crawford, Joanna (2021)  
 Criminal Justice & Human Services  
 MA George Fox University

Davis, Ryan (2006)  
 English  
 MA Mississippi State University  
 BS Western Oregon State College

Devendorf, Mark (2016)  
 Art  
 MA San Diego State University  
 BA University of California

DeWaay, Sara "SD" (2019)  
 Library  
 MSI University of Michigan

Dickinson, James (1994)  
 Astronomy  
 MS Portland State University  
 MS Portland State University  
 BS Oregon State University

Dier, Sara (2021)  
 Director, Foundation

Dodge, Trevor (2004)  
 English  
 MA Illinois State University  
 BA University of Idaho

Dodson, Carol (2001)  
 Nursing  
 MS Oregon Health & Science University  
 BSN Sonoma State University

Donnelly, Taylor (2012)  
 English  
 PhD University of Oregon

Echevarria, Ada (2023)  
 Early Childhood Education and Family Studies  
 MA Pacific Oaks University  
 BA Pacific Oaks University

Ellis, Amy (2016)  
 World Languages  
 ME Lewis and Clark College

Ellison, Becky (2023)  
 Nursing  
 MSN University of Providence  
 BS University of Portland  
 BA Lewis and Clark College

Farrell, Michael "Mike" (2018)  
 Engineering  
 MS Washington State University  
 BS Rose-Hulman Institute of Technology

Fisher, William (2017)  
 Customized Training  
 Vocational Certification, Arizona Automotive Institute



- Flowers, Jackie (1997)  
History  
PhD University of South Carolina  
MA University of South Carolina  
BA Appalachian State University  
BA University of Tennessee
- Forney, Beverly (2013)  
Business/Computer Science  
MEd Concordia University  
MAT Concordia University
- Fouhy, Abe (2014)  
Manufacturing
- Francis, Eden (2003)  
Chemistry  
MS University of Oregon  
BS Linfield College  
AA Cottey College  
AS Cottey College
- Freeman, Jil (2014)  
Instructional Designer  
MS Portland State University  
BS Portland State University
- Ginsburg, John (2015)  
Director, Student Life & Title IX Coordinator for Students  
JD St Louis University
- Gravelle, Erin (2023)  
Associate Dean, Technology, Applied Science and Public Service  
Ed.D. Seattle University  
MIT Seattle University  
BA University of Washington
- Goff, Susan "Sue" (2014)  
Dean, Arts & Sciences  
PhD Oregon State University  
MBA Portland State University  
BS Oregon State University
- Gulley, Jordan (2023)  
Wildland Fire
- Hall, Adam (1998)  
Mathematics  
MS Portland State University  
BS Portland State University
- Hall, Lori (2015)  
Executive Director, College Relations and Marketing  
BA University of Minnesota  
MBA Marylhurst University
- Hann, Lucas (2022)  
Communications  
MA Syracuse University
- Hendricks, Dawn (2012)  
Early Childhood Education & Family Studies  
EdD Pepperdine University  
MA Portland State University  
BA Portland State University
- Hiatt, Kari (2020)  
Health Sciences/Dental  
MS Portland State University  
BS Portland State University
- Hollingsworth, Kathleen (2013)  
Music  
DMA University of Miami  
MM San Francisco State University  
BM Northern Arizona University
- Hoover, Sarah (2004)  
Geology  
MS University of Oregon  
BS North Carolina State University
- Hopkins, Katherine (2023)  
Director, Human Resources  
BS Portland State University
- House, Mark (2012)  
Automotive Technology  
AAS Clackamas Community College
- Hisao, Hung-Mei "Berri" (2019)  
Math  
MS Montana State University  
MEd University of Oregon  
BS University of Oregon
- Hughes, Kerrie (2007)  
Communication Studies  
MA University of Portland  
BS Portland State University  
A Clackamas Community College
- Jones, Melissa (2007)  
Student Publications/Journalism  
MA University of Michigan  
MA Portland State University  
BA University of California,  
Los Angeles
- Joyce, Laura (2015)  
English as a Second Language  
MA Concordia University  
BS University of Notre Dame
- Kalman, Rachel (2022)  
Art  
MFA Washington University
- Kandratieff, Peter "Pete" (2001)  
Campus Safety Manager  
BS Portland State University

- Kelly, Erin (2022)  
Mathematics  
MS California Polytechnic State University
- Kilders, Frank (2016)  
Horticulture  
BA Technical College of Wiesbaden
- Kissler, Jessica (2020)  
Psychology  
MS Washington State University  
BS Washington State University
- Konieczka, Chris (2013)  
Horticulture  
MS University of Wisconsin Madison  
BS University of Wisconsin Madison
- Kop, Barry (2005)  
Science  
DC University of Western States  
MAT Portland State University  
BS University of Oregon  
BA University of Washington
- Kovac, Jason (2018)  
Dean, Institutional Effectiveness and Planning  
PhD University of Texas  
MS University of Illinois  
BA Washington University
- Kraten, Carrie (2007)  
Director, Customized Training & TAPS Grants  
BS Portland State University School of Business
- Kyser, Carrie (2001)  
Mathematics  
MS Cleveland State University  
BS Eastern Michigan University
- LaForce, Matthew "Matt" (2006)  
Water Environmental Technology/  
Engineering Sciences  
PhD University of Idaho  
MS University of Idaho
- Layton, Casey (2021)  
Chief Diversity, Equity and Inclusion Officer  
MS Warner Pacific College
- Lee, Eric (2012)  
Engineering Science  
PhD Cornell University  
BA Rice University  
BS Rice University
- Lettenmaier, Charles (2015)  
Manufacturing  
BS DeVry University
- Leuck, Jay (2003)  
Automotive Technology  
BS Oregon Institute of Technology  
AS Southwestern Oregon Community College
- Lewandowski, Kurt (1990)  
Mathematics  
MS Oregon State University BS Southern Utah University
- Littlefield, Jane (2015)  
Library  
MA Saint Mary's University  
MLIS Dominican University
- Lockwood, Rick (2005)  
Automotive Technology  
AA College of Sequoias  
ASE Master Tech, L1
- Long, Kathryn (2015)  
English as a Second Language  
MA Portland State University  
BA Portland State University
- Lougee, Derek (2021)  
Economics  
MA Cornell University
- Mach, Susan (1997)  
English  
MA Boston University  
BA Pacific University
- Martineau, James "Jim" (2009)  
Director, Health, Physical Education  
& Athletics  
MS Western Oregon University  
BS Southern Oregon University
- Martinez, Guadalupe (2000)  
Counseling  
MAIS Oregon State University  
BA Oregon State University
- Marks, Dennis (2023)  
Director, College Safety  
BS Corban University  
AAS Chemeketa Community College
- Mason, Debra (2022)  
Executive Director, CCC Foundation  
MS University of California  
BS Sonoma State University
- Mattson, Michael "Mike" (1996)  
Manufacturing Technology  
MA Oregon State University  
BS Purdue University
- McAlpine, Jeffrey "Jeff" (2007)  
English  
MA Portland State University  
BS Willamette University
- McFarland, Patricia (2000)  
History  
PhD Louisiana State University  
MA University of Southern Mississippi  
BA University of Southern Mississippi

McHone, Errol "Keoni" (2004)  
 Head Track and Field & Cross Country Coach  
 Heath, Physical Education & Athletics  
 MS Ed Western Oregon University  
 BS Western Oregon University

Mercer, Kelly (2014)  
 Mathematics  
 MST Portland State University

Milldrum, Jennifer (2011)  
 Student Accounts Manager/Bursar  
 BS Portland State University

Miller, Jennifer (2014)  
 Computer Science  
 MS Duke University

Moiso, Michael (2014)  
 Business  
 JD Willamette University

Montgomery, Kelly (2014)  
 Manager, Custodial Services

Mount, David (1992)  
 English  
 MA University of California,  
 Los Angeles  
 BA California State University, Fullerton

Murphy, Stephanie (2021)  
 Director, Adult Education  
 EDD University of Portland  
 MAT Concordia University  
 BS University of Florida

Mulligan, Bruce (2016)  
 Welding  
 AS Connelly Skill Learning Center

Munds, Justine (2022)  
 Library  
 MLIS Syracuse University

Munro, Suzanne (1998)  
 English as a Second Language  
 MA Fuller Theological Seminary  
 MA San Francisco State University  
 BA Westmont College

Myers, Deanna (2022)  
 Chemistry  
 Phd University of California  
 MS University of California

Nelson, Tracy (2004)  
 Heath, Physical Education & Athletics  
 MS Portland State University  
 BS University of Portland

Nickas, Melinda (2019)  
 Skills Development  
 MEd Marylhurst University  
 BS California State University

Nielson, Lisa (2003)  
 Skills Development  
 MEd Pennsylvania State University  
 BA University of Oregon

Nolan, Sarah (2006)  
 Library  
 MS Simmons College  
 BA University of Washington

Nurmi, James (2011)  
 Engineering Science  
 PhD Oregon Health & Science  
 University  
 BA Gustavus Adolphus College

Olsen, Sunny (2007)  
 Director, Community Education & Harmony Campus  
 MSW Portland State University  
 BA Azusa Pacific University

Parker, Sarah (2021)  
 Health Sciences  
 AAMA Concorde Career Institute  
 AS Portland Bible College

Parker, Sharon (2007)  
 Business  
 MS Florida International University  
 MBA Florida Atlantic University  
 BS University of Nevada, Las Vegas

Patterson, Michael (2010)  
 Science  
 MS University of Michigan  
 BS University of Michigan

Pfeifer, Erich (2014)  
 Sociology  
 MS Portland State University  
 BS Portland State University

Phelps, John (2011)  
 Welding  
 AAS Clackamas Community College  
 American Welding Society (AWS) Certified

Plotkin, David (2015)  
 Vice President, Instruction and  
 Student Services  
 PhD University of California, Irvine

Prince, Ron (2021)  
 Director, Plant Engineering  
 AS Portland Community College

Pruyn, Scot (2014)  
 Mathematics  
 MA University of Kansas  
 BSE University of Kansas

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