

Catalog

 Clackamas
Community College

2020-2021





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 275 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

2020-2021 Academic Calendar

Please check a current *Class Schedule* to confirm these dates.

2020 SUMMER TERM

Classes begin	Monday, June 22
Independence Day holiday (College closed)	Thursday, July 2
Labor Day holiday (College closed).....	Monday, Sept. 7
Term ends	Saturday, Sept. 5

2020 FALL TERM

In-service week (College closed until 1 p.m. Sept. 22 and Sept. 23).....	Sept. 21–25
Classes begin	Monday, Oct. 5
Veterans Day holiday (Harmony and Oregon City campuses closed)	Wednesday, Nov. 11
Thanksgiving holiday (College closed).....	Thursday–Friday, Nov. 26–27 (Wednesday evening classes, beginning at 4 p.m. or later, are canceled prior to Thanksgiving.)
Finals week	Monday–Saturday, Dec. 7–12
Term ends	Saturday, Dec. 12
Winter break (College closed)	Thursday, Dec. 24 & Friday, Dec. 25
New Year’s Day holiday (College closed)	Friday, Jan. 1

2021 WINTER TERM

Classes begin	Monday, Jan. 4
Martin Luther King Jr. holiday (Harmony and Oregon City campuses closed)	Monday, Jan. 18
Presidents Day (Harmony and Oregon City campuses closed)	Monday, Feb. 15
Finals week	Monday–Saturday, March 15–20
Term ends	Saturday, March 20
Spring break	March 22–26

2021 SPRING TERM

Classes begin	Monday, March 29
Skills Contest.....	Thursday, April 15 (Day lecture classes canceled at Oregon City and Harmony campus only. Evening classes, beginning at 4 p.m. or later, held as scheduled.)
Memorial Day (College closed).....	Monday, May 31
Finals week	Monday–Saturday, June 7–12
GED & Adult High School Diploma Graduation Ceremony.....	Thursday, June 10
College Certificate & Degree Graduation Ceremony	Friday, June 11
Term ends	Saturday, June 12



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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

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.



Clackamas At A Glance

www.clackamas.edu



Education That Works



Who We Are

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 which 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 which 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



Goals developed and adopted by the VISIONS Group, May 1993.

Purpose, Mission, Philosophy, Code of Ethics, and Values updated and adopted by the CCC Board of Education, December 1994.

Instructional Values adopted by the VISIONS Group, May 1996.

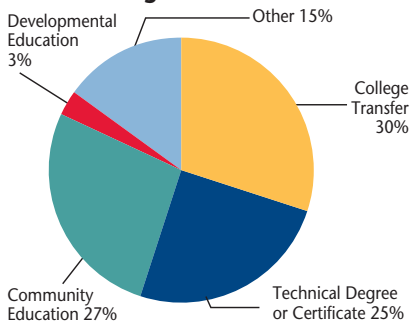
2018-2019 Enrollment Statistics

Headcount	24,565
Fall Full-time students	2,296
Fall Part-time students	6,585
Fall Non-credit students	4,507
Full-time equivalence	6,353
Average age, all students	32
Average age, full-time students	23
Known females	9,398 (48.7%)
Known males	9,886 (51.3%)
Racial/ethnic known students of color in student body	19%
Degrees/certificates awarded	1,238

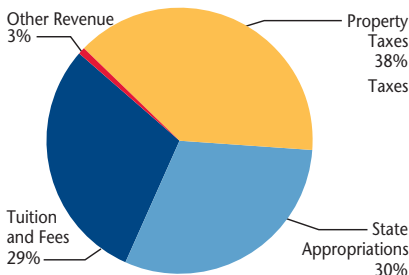
For more information on these and other college statistics, contact the Office of Institutional Research & Reporting at 503-594-6140.

Note: Financial aid information does not include institutional or scholarship aid.

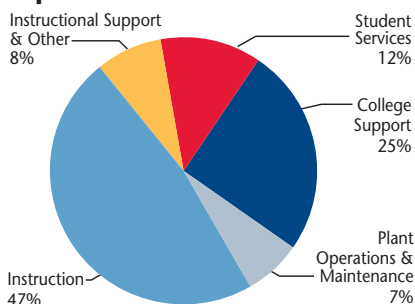
Enrollment Breakdown by Student Program 2018-2019



Revenue - General Fund



Expenditures - General Fund



CCC at a Glance

Numbers reflect 2018-19 data unless otherwise noted.

Service Area

CCC District: All of Clackamas County except Lake Oswego, Sandy, Damascus and Boring school districts.

District Population: estimated – County 416,075 (2018 Census)
District (83%) = 343,727 (2018 Census)

Enrollment

2018-19 Head count: 24,565

2018-19 Full-time equivalence: 6,353.1

Programs

Career Technical: CCC offers 119 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 admission and registration, at any Oregon University System (OUS) institution.

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, GED, ESL, 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.

CCC President

Dr. Tim Cook

Board of Education

Greg Chaimov

Chris Groener

Dave Hunt

Irene Konev

Jane Reid

Betty Reynolds

Rob Wheeler

Departments and Offices

College Main Number: 503-594-6000

BLDG.*	DEPARTMENT/OFFICE	PHONE
ABE/GED		
D	Oregon City	503-594-3028
H	Harmony	503-594-0633
D	Adult High School Diploma - Oregon City	503-594-0633

BLDG.*	DEPARTMENT/OFFICE	PHONE
Academic Advising		
CC	Oregon City	503-594-3475
H	Harmony	503-594-0623
W	Wilsonville	503-594-0959

BLDG.*	DEPARTMENT/OFFICE	PHONE
Bookstore		
M	Bookstore-Oregon City	503-594-6500
H	Bookstore-Harmony	503-594-0647

BLDG.*	DEPARTMENT/OFFICE	PHONE
Testing/Assessment Center		
RR	Oregon City	503-594-3283
HW	Harmony	503-594-0636
W	Wilsonville	503-594-0940

RR	Admissions & Recruitment/Admissions Center	503-594-3284
CC	Advanced College Credit	503-594-3499
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
CC	Cafeteria	503-594-6090
M	Campus Safety Office	503-594-6650
RR	Campus Tours	503-594-6249
CC	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
S	Computer Science	503-594-3071
CC	Cooperative Work Experience	503-594-3511
CC	Counseling	503-594-3176
HW	Criminal Justice/Corrections	503-594-3203
C	Customized Training & Development	503-594-3200
AC	Digital Media Communications	503-594-3034
CC	Disability Resource Center	503-594-6357
M	Distance Learning	503-594-6310
F	Early Childhood Education & Family Studies	503-594-3203
F	Education	503-594-3203
CC	Education Partnerships/High School Connections	503-594-3161
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 as a Second Language	503-594-3234

BLDG.*	DEPARTMENT/OFFICE	PHONE
RR	Enrollment Services	503-594-6100
ELC	Environmental Learning Center	503-594-3015
B	Environmental Safety & Health	503-594-3322
G	Facility Scheduling	503-594-3308
RR	Financial Aid Office	503-594-6100
T	Fire Science (Wildland Fire)	503-594-3539
C	Gerontology	503-594-3203
B	GIS	503-594-3318
RR	Graduation Services	503-594-6651
R	Gym	503-594-3043
H	Harmony Campus Registration/Information	503-594-0620
H	Health Sciences	503-594-0650
CC	High School Partnerships	503-594-3208
C	Horticulture	503-594-3292
B	Human Resources/Employment Opportunity	503-594-3458
C	Human Services	503-594-3203
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
CC	Life & Career Options	503-594-3176
I	Manufacturing Technology	503-594-3318
S	Math	503-594-3395
M	Moodle Help	503-594-6310
N	Music	503-594-3337
H	Nursing	503-594-0650
CC	Office of Education Partnerships	503-594-3220
C	Organic Farming	503-594-3292
C	Paraeducator	503-594-3203
P	Pauling Center Gallery	503-594-3034
R	Physical Education	503-594-3043
B	President's Office	503-594-3002
RR	Registration and Records	503-594-6100
I	Renewable Energy Technology	503-594-3318
RR	Scholarship Office	503-594-3421
DJ	Science	503-594-3345
D	Skills Development	503-594-3028
M	Social Science	503-594-3403
RR	Student Accounts	503-594-6100
CC	Student Government	503-594-3040
CC	Student Life & Leadership	503-594-3040
CC	Student Support Services	503-594-3475
N	Theater/Performing Arts	503-594-3153
CC	Tutoring Services	503-594-6191
CC	Veterans Educational Benefits	503-594-3438
CC	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
W	Wilsonville Registration/Information	503-594-0940
P	Workforce Development Services	503-594-6246
M	World Languages (formerly Foreign Languages)	503-594-3403
D	Writing Center	503-594-6275

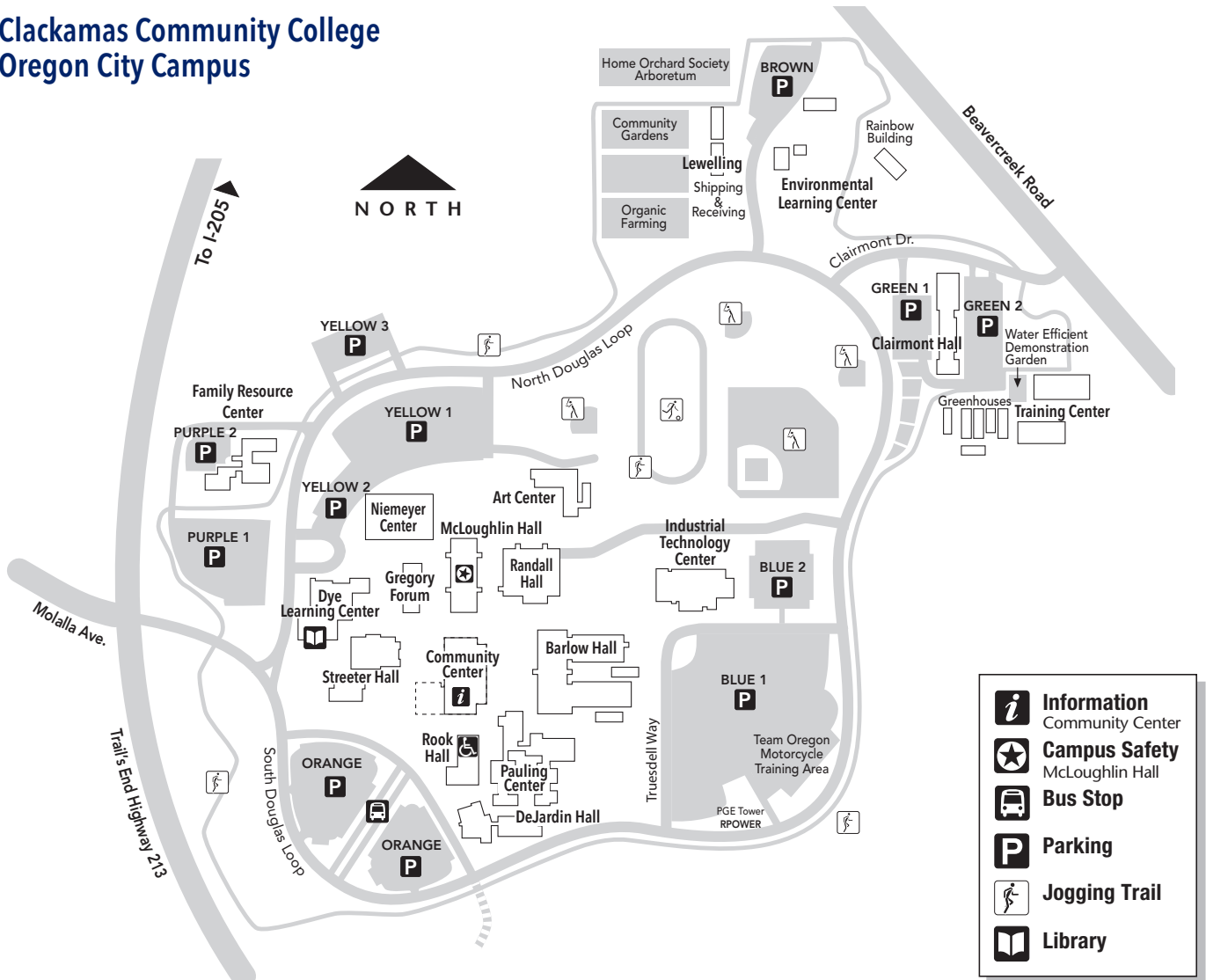
* Find building code key on campus map page.

Campus Safety

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

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

Clackamas Community College Oregon City Campus



	Information Community Center
	Campus Safety McLoughlin Hall
	Bus Stop
	Parking
	Jogging Trail
	Library

CODE BUILDING NAME (OC CAMPUS)

AC	Art Center
B	Barlow Hall
C	Clairmont Hall
CC	Community Center
D	Dye Learning Center
DJ	DeJardin Hall
ELC	Environmental Learning Center
F	Family Resource Center
G	Gregory Forum
H	CCC at Harmony Community Campus - East
HW	CCC at Harmony Community Campus - West
I	Industrial Technology Center
M	McLoughlin Hall
MOD1&2	Modulars
N	Niemeyer Center
P	Pauling Center
R	Randall Hall
RR	Rook Hall
S	Streeter Hall
T	Training Center
W	CCC Wilsonville Campus

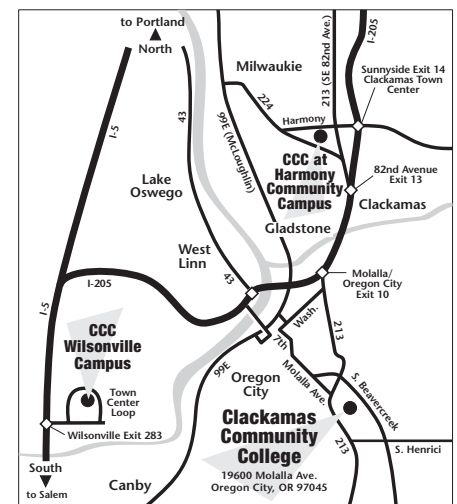
CCC CAMPUS SITES

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

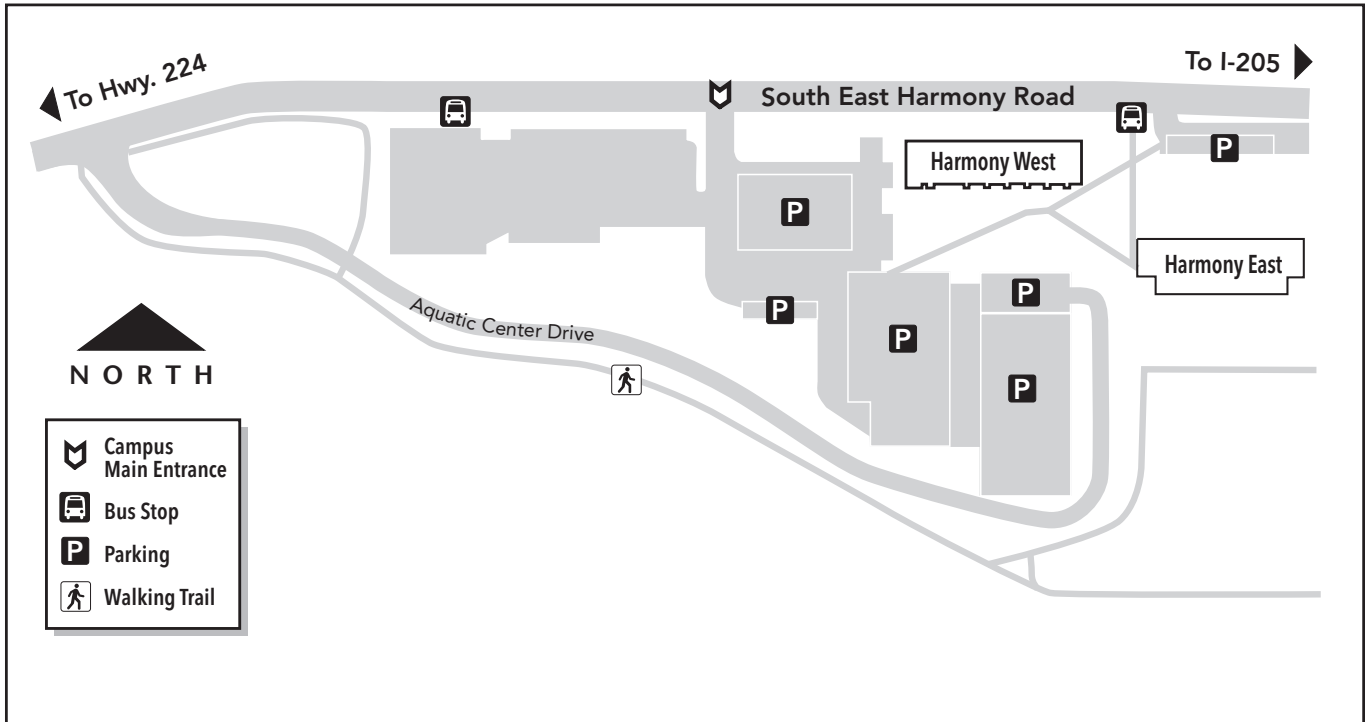
CCC OFF-CAMPUS SITES

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

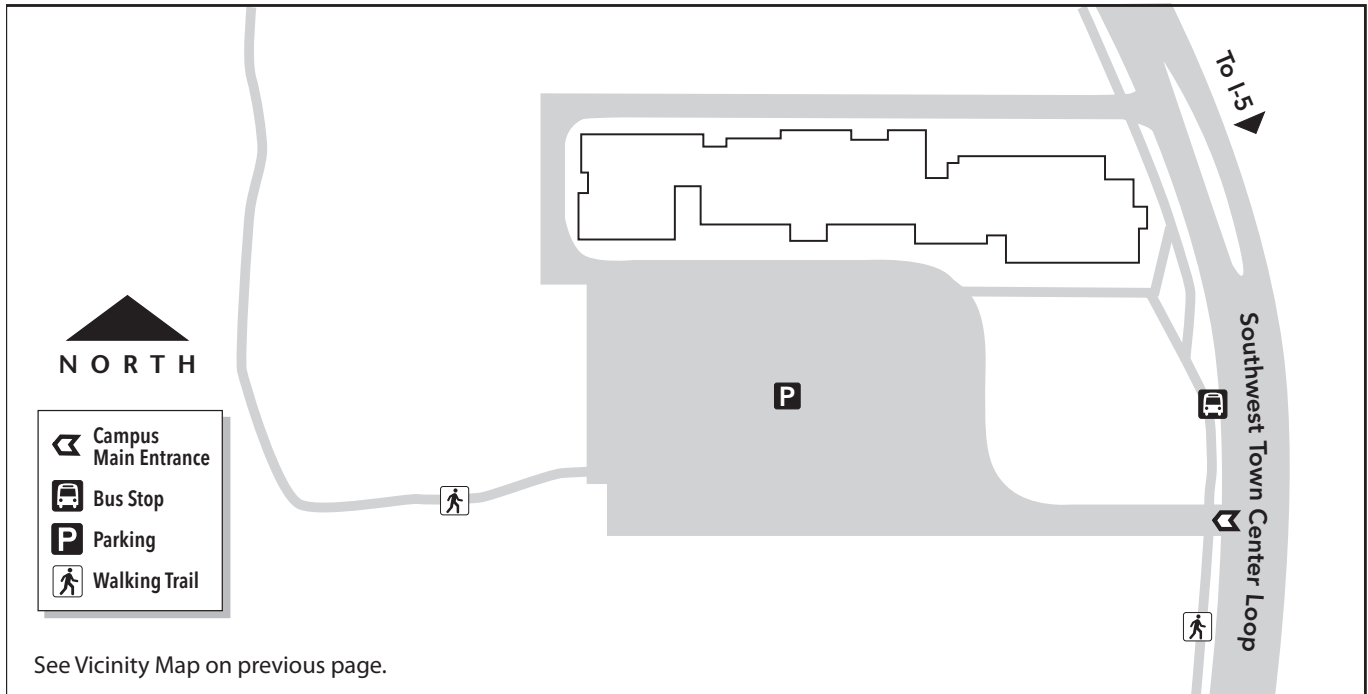
VICINITY MAP



Clackamas Community College Harmony Community Campus



Clackamas Community College Wilsonville Campus



Getting Started

www.clackamas.edu



Education That Works



Admission

ENROLLMENT SERVICES CENTERS
ALL CAMPUS LOCATIONS

503-594-6074

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 go to www.clackamas.edu and click on “Admissions & Financial Aid” 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 grade of “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; click on “Admissions & Financial Aid”.

Special Admission Programs

The following programs require a separate admission application:

- Degree Partnership Programs (four-year universities)
- International Students
- Clinical Lab Assistant/Phlebotomy
- 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.

Degree Partnership Programs

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. Several Associate of Science degrees and Associate of Applied Science degrees have articulation agreements.
- Associate of Science degrees are specifically designed with transfer to a partner four-year institution in mind and CCC offers an array of options.
- Associate of Arts – Oregon Transfer and Associate of Science – Oregon Transfer/Business are both transfer degrees that are accepted by all Oregon public universities and several private colleges as well.
- Oregon Transfer Module is a one-year transfer program accepted by all public Oregon universities as general education credit fulfilling the first year requirements at the receiving institution.

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.

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. No fee is charged.

Undocumented Oregon residents complete the Oregon Student Aid Application (ORSAA) at 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. Click on "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 \$6,195 a year in 2020-21, 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 EDUCATIONAL 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 and be enrolled fall term 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 the 2019-20 award year, the maximum award is \$3594. Award amounts for the 2020-21 award year are unknown at the time of publishing. Applicants must be residents of Oregon. For more information or to apply, visit 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.

Scholarships

503-594-6082

scholarships@clackamas.edu

Clackamas Community College offers various scholarship opportunities for students of all majors. For a complete list, visit 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 12 at www.clackamas.edu/scholarships.

In-district high school students who compete in the annual Clackamas Regional Skills contest are eligible for CCC scholarships. Partial, one-term tuition scholarships 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.

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 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.

Veterans Benefits

CCC OREGON CITY CAMPUS
BILL BROD COMMUNITY CENTER, RM100

503-594-3438

vetinfo@clackamas.edu

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!



Determine Course Placement

Testing and Placement Services

CCC OREGON CITY CAMPUS, ROGER ROOK HALL, RR136
503-594-3283

CCC HARMONY COMMUNITY CAMPUS
503-594-0636

CCC WILSONVILLE CAMPUS
503-594-0940

Visit www.clackamas.edu/pass for more information or call for testing and placement hours.

Getting placed in the right classes can save you time and money.

New students at Clackamas Community College need to complete our free placement assessment process to determine their math and writing placements prior to registration for many courses at CCC or attending a Registration Workshop. Visit www.clackamas.edu/pass to learn more about our Placement Advising for Student Success (PASS) program.

STEPS TO COMPLETE THE PLACEMENT ASSESSMENT PROCESS

1. Visit CCC Testing and Placement Services with photo ID and bring the following (if available): unofficial transcripts (past college transcripts/high school transcripts within past two years) and past test scores (GED, SAT, ACT, placement test scores, etc.)
 - CCC Oregon City Campus – No appointment necessary
 - CCC Wilsonville and Harmony Campuses – Check for availability to meet with a PASS Advisor
2. Complete the placement intake form and meet with our placement staff. Our placement staff work with students to guide placement into the highest-level math and writing course in which they are likely to succeed with appropriate supports. PASS placements use student input and multiple other measures, rather than a single test score, to promote the student's choice in determining their best path at Clackamas Community College.
3. Determine if a placement test is necessary.
 - Placement tests may be necessary for new students when more information is needed to access math and writing skill levels.
 - Students applying to apprenticeship programs and some limited enrollment programs are required to take placement tests.

INFORMATION ABOUT PLACEMENT TESTS

- CCC offers Accuplacer Next Generation placement tests.
- Additional information about the placement tests can be reviewed at 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/.

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

Advising Sessions/ Talking with an Advisor

Student Services

CCC OREGON CITY CAMPUS
BILL BROD COMMUNITY CENTER
503-594-3475

CCC HARMONY COMMUNITY CAMPUS
503-594-0623

CCC WILSONVILLE CAMPUS
503-594-0959

www.clackamas.edu/advising

Students who are new to college are strongly encouraged to attend a registration workshop after completing their online orientation and determining their course placement. During this two-hour session, advisors will review campus resources and degree requirements, and will help you choose and register for courses. Please visit the website or call for specific information regarding registration workshops.

Students with previous college coursework who are transferring into CCC should meet with an advisor at any of our campus locations.

Faculty advisors in the academic departments are also available by appointment to provide specific information about your program of study. They can also serve as mentors. Your faculty advisor's name, email address, phone number and office number are listed in the *Class Schedule* each term.

No matter what program you are working on, you should work with an advisor to be sure you're taking classes that meet your goals.

Registration

ENROLLMENT SERVICES CENTERS
ALL CAMPUS LOCATIONS
503-594-6074
registration@clackamas.edu

Registration is available for currently enrolled, returning and admitted students via your myClackamas account, fax/mail-in and in person as explained in our *Class Schedule* each term.

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. 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 Changing Grading Method

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 myClackamas or in person.
- To change your grading method (from graded to P/NP, or P/NP to graded), you must submit a request to Enrollment Services by the end of the sixth week of the term.
- To change to an audit, you must submit a request to Enrollment Services by the end of the sixth week of the term. For more information regarding the audit option, see page 26.

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 stated class prerequisite or co-requisite requirement.
- 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 Services.
- Students who are currently registered for a section (e.g., MTH-111) and do not pass the prerequisite (e.g., MTH-095) will be administratively withdrawn from the currently registered course (e.g., MTH-111) by the Enrollment Services Office.
- Students may also be administratively withdrawn from classes due to conduct issues or due to a balance being owed to the college.

Wait List Procedure

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

- Add your name to the wait list via myClackamas 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 wait list
 - Upon receiving an invitation to add a class you will need to go to "Manage My Waitlist" within myClackamas.
 - You will have 48 hours to respond to the invitation.
 - If you miss your window, you will not be bumped from the wait list but rather will be passed by for the next student and you will receive another invitation when your spot comes up again.
- Note: This process ends once a course begins. You must contact your instructor directly once a course has started.
- 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 wait list placement:

- Wait list capacity has been met.
- There is a "hold" on your student record that restricts registration.
- There are course restrictions in place such as "instructor consent."
- 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

2020-2021 Tuition and Fees

Tuition and fee rates, as well as payment option information, can be found in a current copy of the *Class Schedule*. Please note that tuition and fee rates are subject to change without prior notice.

TUITION TYPE	RATE	COMMENT
In-State	\$108 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	\$274 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	\$8.50 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.
Deferred Payment Fee	\$30 per term	Applied after the second week of the term if a balance is owed to the college.
Late Add Fee	\$50 per class	Applied on the fourth business day after the first official day of the class.
Non-Payment Fee	\$75 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 <i>Class Schedule</i> .
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, Non-Challenge 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 the 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* in every low-cost course will be less than \$40. Identify CCC's low-cost courses by looking for the LCT icon in the print and online Course Schedules.

*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.

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 printed 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 @ 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 the rate of 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 or from Enrollment Services.

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

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 to learn how to make your payment.

Pay Later: If you choose this option, payment is due by the second Friday of the term. Accounts with a balance after this date may receive a \$30 Deferred Payment Fee. (To qualify for this option, you must be at least 18 years of age, have a balance of at least \$100 and cannot have an existing balance from a previous term).

Non Payment Fee: If your account balance is not paid in full by the sixth Friday of the term, your account may be assessed a non-payment fee of \$75. Also, a hold will be placed on your account that will prevent access to your transcripts and 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 stuaccounts@clackamas.edu. If you have a question regarding a refund, contact Enrollment Services at 503-594-6074 or registration@clackamas.edu.

Canceled Class

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



Academic Information & Regulations

www.clackamas.edu



Education That Works



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.
- Be sure to 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 arrangement 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 fnaid@clackamas.edu or www.clackamas.edu for more information.

Academic Standing

All degree/certificate seeking students enrolling in six 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 does not include credits dropped prior to the sixth 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.

- 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 Probation" 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 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 myClackamas, fax, mail or in person.
- Students who have already shipped out or are unable to drop classes should contact Enrollment Services directly: 503-594-6074 or registrar@clackamas.edu.
- You will be asked to submit a copy of your orders along with a request for a refund/credit to Enrollment 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.

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 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:

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.*

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.

* 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.

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	N/A
P	Pass, credit given, no grade points	N/A
UG	Unreported grade no credit, no grade points	N/A
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 time line 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 grade only. You will select your grade option at the time of registration. Changes to grade option must be made with Enrollment 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

A prerequisite is a course that must be satisfactorily completed before you can enroll in a particular course. The *Class Schedule* indicates whether a course has a prerequisite under each course title.

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 your myClackamas account and the obligation must be resolved before the hold is removed.

See page 19 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 Services. Unofficial transcripts are available by going to the web at my.clackamas.edu/

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

www.clackamas.edu



Education That Works



Student Resources & Support Services

Academic Advising & Career Coaching

www.clackamas.edu/advising

Student Services

CCC OREGON CITY CAMPUS, COMMUNITY CENTER
503-594-3475

CCC HARMONY COMMUNITY CAMPUS
HARMONY BUILDING
503-594-0623

CCC WILSONVILLE CAMPUS
503-594-0959

Academic and career coaches are available on a drop-in and appointment basis 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.

Throughout the year, academic and career coaches hold registration workshops for new students, pre-nursing students and others. Visit the website for more information.

Accounts Receivable

www.clackamas.edu/pay

503-594-6068

Accounts Receivable provides services to both students and departments on 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 page 21.

Associated Student Government

www.clackamas.edu/asg

CCC OREGON CITY CAMPUS, COMMUNITY CENTER, CC152
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 officers 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 and the Cougar Cave Food Pantry. It also coordinates a variety of activities such as awareness events, bbqs and parties.

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

Athletics

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

<https://clackamas.bncollege.com>

CCC OREGON CITY CAMPUS, MCLOUGHLIN HALL
503-594-6500

CCC HARMONY CAMPUS, WEST BUILDING
503-594-0647

There are two Bookstore locations 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 call 503-594-6500. Hours of operation are posted on the front door and on the Bookstore website, <https://clackamas.bncollege.com>

The Harmony Bookstore is in the lobby of the Harmony West Building. For more information call 503-594-0647. Hours of operation are posted on the door and on the Bookstore website, <https://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 which 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, <https://clackamas.bncollege.com>

Career Services

www.clackamas.edu/careers

CCC OREGON CITY CAMPUS, COMMUNITY 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/

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

www.cccchs.org

503-675-4565

CCCC provides free preschool and day care services on campus.

Head Start Preschool

Preschool services through Head Start gives 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

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

CCC OREGON CITY CAMPUS, COMMUNITY CENTER
503-594-3176

CCC HARMONY COMMUNITY CAMPUS
503-594-0625

Counselors are available to provide retention and support services that help students benefit from their experience at Clackamas Community College. Counselors at CCC help students develop career goals and design a path of education or training that will help them reach those goals. Short-term personal counseling and referrals to community resources are provided to students to help identify and overcome barriers that are interfering with success. Counselors also teach courses related to academic strategies and applied life skills. These classes are designed to improve career, personal and academic achievement

Community Gardens

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 Student Life & Leadership at 503-594-3040.

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.

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. A project room is available for student groups to work together. Streeter Hall Open Computing Lab is open Monday–Thursday, 9 a.m.–4 p.m.

Academic Computing Lab

See *The Learning Center*.

Music Technology and Audio Recording Labs

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 work stations.

Software includes Finale, ProTools and Reason.

Disability Resource Center

www.clackamas.edu/drc

CCC OREGON CITY CAMPUS, COMMUNITY CENTER
503-594-6357

drc@clackamas.edu

The Disability Resource Center (DRC) provides services to support student success by creating a welcoming, inclusive and accessible environment. The DRC offers a wide range of services to provide students with disabilities equal access to college programs, activities and auxiliary support. The DRC also provides faculty/staff consultations. If you have a history of receiving accommodations or just have questions on how to qualify for services, call or stop by so we can assist you.

Students requesting services must:

- Meet with a DRC staff member.
- Provide the DRC with documentation from a certifying professional that establishes the existence of a current disability and supports the need for accommodations requested.
- Request accommodations through a DRC staff member.

Accessible parking (disabled parking) is available close to each campus building and disabled parking permits are obtained through the Oregon State Department of Motor Vehicles.

Clackamas Community College does not discriminate on the basis of disability or any other protected status in accordance with applicable law. The College's commitment to nondiscrimination applies to curricular activity and all aspects of operation of the college.

Clackamas Community College is dedicated to providing a harassment-free environment for all people with disabilities, as well as a timely and effective provision of services for students with disabilities. Any student with a disability who feels they have been discriminated against or harassed due to their disability should contact the Disability Resource Center Coordinator.

Enrollment Services Center

CCC OREGON CITY CAMPUS, ROGER ROOK HALL
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

CCC OREGON CITY CAMPUS, ROGER ROOK HALL
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

STEP 2 APPLY FOR FINANCIAL AID

U.S. CITIZENS AND PERMANENT RESIDENTS:

Apply at 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 <https://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: <https://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: studentloans.gov
Complete: Entrance Counseling for CCC and a Master Promissory Note (MPN). (Select Subsidized/Unsubsidized.)

NEED HELP?

- Drop-in hours on the Oregon City Campus are Monday, Tuesday, Thursday and Friday from 9 a.m. - 4 p.m. and Wednesday from 10 a.m. - 4 p.m.
Drop-in hours on the Harmony Campus are Monday (First week of the term ONLY) and Thursday (All Term) from 8 a.m. - 12 p.m. and 1 p.m. - 5 p.m.
 - Financial Aid Resource Lab is open Monday–Thursday 10 a.m.–1 p.m. & 1:30–3 p.m. The Financial Aid Resource Lab is open to the public to assist with completing the FAFSA, FSA ID, ORSAA, Scholarship Applications, Entrance Counseling, Master Promissory Note and more.
 - Email: finaid@clackamas.edu
- Follow the CCC financial aid recommended deadlines to ensure you receive financial aid funds in a timely manner.

2020-2021

Financial Aid Recommended Deadlines

SUMMER TERM 2020: APRIL 20, 2020

FALL TERM 2020: JUNE 22, 2020

WINTER TERM 2021: SEPT. 28, 2020

SPRING TERM 2021: JAN. 4, 2021

Visit The Financial Aid Resource Lab

Roger Rook Hall/Oregon City Campus

Monday – Thursday, 10 a.m.– 1 p.m. and 1:30 p.m. – 3 p.m.

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

Staffed by CCC Financial Aid Professionals

Scholarships

www.clackamas.edu/Scholarships

503-594-6082

Clackamas Community College has many scholarship opportunities available for students of all majors. Anyone who plans to attend CCC during the academic year to pursue a degree or certificate can apply. A complete list is available at <https://clackamas.academicworks.com>.

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. 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 Jan. 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.

High school students who live in the district and compete in the annual Clackamas Regional Skills contest are eligible for partial one-term tuition scholarships 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 extra-curricular 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 <http://clackamas.academicworks.com>. Click on *Opportunities*, and choose *External*.

Environmental Learning Center

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.

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

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

www.jewelthosp.com

CCC OREGON CITY CAMPUS, COMMUNITY CENTER

The Cougar Café in the Community Center 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. Also, look for food trucks at various times and days at the Oregon City campus. You can see what trucks are scheduled on any day (and check out their menus) using Street Food Finder.



Graduation Services

CCC OREGON CITY CAMPUS
503-594-6651
gradservices@clackamas.edu

Graduation Services can assist you on the total number of credits being transferred in from other colleges, identify the number of credits needed to complete your degree and assist you with your petition to graduate.

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

CCC OREGON CITY CAMPUS, DYE LEARNING CENTER
503-594-6191
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 offers the services listed below. Hours: Monday–Thursday, 7:30 a.m.–8 p.m.; Friday, 7:30 a.m.–5 p.m.; Saturday, 11 a.m.–3 p.m.

Harmony Tutoring Lab
www.clackamas.edu/tutoring

HARMONY TUTORING LAB, HARMONY WEST THIRD FLOOR
503-594-6191
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 web, www.clackamas.edu/tutoring.

Academic Computing Lab

503-594-6632
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 www.clackamas.edu/tutoring.

Math Lab

503-594-3121
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.

The Learning Center, continued

Writing Center

503-594-6275

writing@clackamas.edu

The Writing Center offers students one-to-one feedback on any writing assignment, for any class or project. Online tutoring may be available by request. 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 web, www.clackamas.edu/tutoring.

Subject-Area Tutoring

503-594-6191

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 through Smarthinking.com

503-594-6191

tutoring@clackamas.edu

Smarthinking is 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 Smarthinking tutoring per term by logging into their Moodle account and clicking on the Smarthinking link located on the top right of their screen. More information found at www.clackamas.edu/Smarthinking

Library

library.clackamas.edu

Circulation: 503-594-6323, Reference: 503-594-6042

circ@clackamas.edu

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 – both in the library and online from anywhere. Search for and request library material from 37 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, by phone, 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.

Music

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

CCC OREGON CITY CAMPUS, COMMUNITY CENTER
503-594-3444

Students selected to serve in the Peer Program serve in the leadership roles of Peer Assistants. They serve our college in a variety of positions on campus, ranging from in-classroom mentoring to working a variety of student services across campus. 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@clackmas.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

CCC OREGON CITY CAMPUS, COMMUNITY CENTER, CC152
503-594-3040

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

- Associated Student Government (ASG)
- Clubs
- Cougar Cave 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
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 publishes 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 or 503-594-3254.

Testing & Placement Services

www.clackamas.edu/testing

CCC OREGON CITY CAMPUS, ROGER ROOK HALL, RR136
503-594-3283

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)
- Computer Science Placement
- Workkeys (National Career Readiness Certificate)
- Oregon Department of Agriculture Exams
- Pearson Vue Testing
- Kryterion Testing

CCC HARMONY CAMPUS, EAST BUILDING, H180

503-594-0636

testing.harmony@clackamas.edu

- Accuplacer Placement Testing
- CCC & non-CCC proctored testing (by arrangement)
- Computer Science Placement
- Workkeys (National Career Readiness Certificate)

CCC WILSONVILLE CAMPUS, EAST WING, W151

503-594-0940

testing.wilsonville@clackamas.edu

- Placement testing and advising
- CCC & non-CCC proctored testing (by arrangement)
- Computer Science Placement
- Workkeys (National Career Readiness Certificate)
- Oregon Department of Agriculture Exams



Theatre

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

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

Tutorial Services

See *The Learning Center*.

Transportation Options for Students

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 Bike Rental Program.

The latest information and additional details can be found at www.clackamas.edu/transportation.

CCC XPRESS Shuttle

Free shuttle runs between the Oregon City and Harmony campuses and the Clackamas Town Center Transit Center. Download the TripShot app for schedule and live transit information.

Carpool Matching Service

Find a carpool partner at GetThereOregon.org. Sign up using your @student.clackamas.edu email address.

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 the term for \$25. Rentals include a helmet, lock, front and rear lights, fenders, rear rack, and discount on repairs.

SAVE MONEY ON YOUR CCC COMMUTE!

NEAR CLACKAMAS TOWN CENTER?

Ride the free CCC Xpress Shuttle.



DRIVE?

Carpool for the chance to win gift cards.



RIDE THE BUS?

Save \$100 on TriMet bus passes. TriMet offers 72% off month pass through Low-Income Fare Program.



Learn more at

www.clackamas.edu/transportation

Veterans Education and Training Center

www.clackamas.edu/veterans

CCC OREGON CITY CAMPUS, COMMUNITY CENTER CC100

503-594-3438

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. In 2016, CCC was ranked No. 2 in the Nation by the Military Times: Best for Vets (2-year Colleges) annual survey, making CCC the No. 1 two-year college in the West. 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

CCC OREGON CITY CAMPUS, COMMUNITY CENTER CC100

503-594-3438

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

503-594-3428

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.

Workforce Services

www.clackamas.edu/workforce

CCC OREGON CITY CAMPUS, FAMILY RESOURCE CENTER

503-594-6246

Building skills and growing businesses!

WorkSource Clackamas is the leading source for employment and training solutions in Clackamas County. Our goal is to develop a highly skilled workforce that creates economic prosperity in Clackamas County. One of our areas of expertise is helping laid-off workers, and those businesses that are in need of a skilled pool of talent to remain competitive.

WorkSource Clackamas is preparing Oregonians for jobs in health care, manufacturing, construction and technology.

WorkSource Clackamas has no-cost career advancement services that can help you:

- Update your skills
- Sharpen your job search expertise with our no-cost workshops
- Access jobs in high-growth careers

Consult our experts! Our career advisors are experts in job search strategies. Take the next step, call 503-594-6246 or visit www.worksourceoregon.org/.

Funded by Clackamas Workforce Partnership www.clackamasworkforce.org through the U.S. Department of Labor and the State of Oregon.

Writing Center

See The Learning Center.



Student Rights

Campus Security Report – Jeanne Clery Act 1

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

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:

- a. Address and telephone number
- b. 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 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 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.* 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*.

*All data from records submitted, filed and accumulated in Enrollment 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

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



Student Rights, continued

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 non-discrimination 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 Disability Resource Coordinator to report the event. The Disabilities Resource 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:

policy.osba.org/clackcc/AB/ACA%20R%20G1.PDF

policy.osba.org/clackcc/AB/AC%20R%20G1.PDF

Sexual Harassment, Assault, and Title IX

503-594-3300

TitleIX@clackamas.edu

www.clackamas.edu/sexualrespect

Title IX is a federal law that protects the rights of all students related to sex, gender and gender identity. 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 an on-campus 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.

If you need assistance resolving a problem, see page 43 for information and a Problem Resolution Form.

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 educational 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:

Section 504 Coordinator, Disability Coordinator
Oregon City campus, 503-594-6357

Title II Coordinator, Darlene Geiger, Associate Dean
Oregon City campus, 503-594-3392

Title IX Coordinator, Chief Human Resources Officer
Oregon City Campus, 503-594-3300

Title IX Coordinator for Students, John Ginsburg
Oregon City Campus, 503-594-3030



Problem Resolution Form

This form is to help students who want to report a problem regarding a faculty or staff member of the College. Please read the instructions below. 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, Community Center 123, 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

Name: _____ CCC Email: _____

Student ID: _____ Telephone: _____ Date: _____

Mailing Address _____ City _____ State _____ Zip _____

Date the Problem Occurred: _____ Location of incident: _____

On a separate piece of paper re-type or clearly print each question prior to each of your answers:

- Have you spoken with the staff member involved (circle one): yes no
If yes, please provide name(s) and describe the discussion, including outcome.
- Please describe the issue, giving rise to your problem/concern, in as much detail as possible. Include any places, dates and /or times you can recall. Also reference campus policy and/or procedures as they may apply.
- Please describe—as clearly as you can—what would resolve this issue for you.

Student Signature _____

FOR OFFICE USE ONLY: Date Stamp Received: _____ By: _____ (initials)

Problem Resolution Form Instructions

Use this form if you have a problem with a member of the college staff that you would like help in resolving. This procedure is not appropriate to address a grade dispute (the instructor maintains authority over a grade) or to pursue a sexual harassment complaint or discrimination due to disability (separate procedures through the HR office are available for these.) To resolve a problem with a member of staff, please follow these steps:

The College encourages you to meet with the staff member involved and discuss the situation. Staff members are eager to listen and, if appropriate, accommodate the concerns of students. If you are uncomfortable doing this or if you are not satisfied with the outcome of your discussion and want to pursue this matter further, use this form as outlined in the remaining steps.

Fill out this form and give it to the staff member's immediate supervisor or to the appropriate Department Chair. You must do this within 30 days of the end of the quarter (term) in which the incident occurred.

Within five working days of receipt of this form, staff will attempt to resolve the situation by discussing it with the staff member and the student. Working days are days that classes are in session.

If you are dissatisfied with the supervisor / Department Chair's efforts on your behalf and want to pursue the "Formal Procedure," follow the steps as outlined in the Student Handbook.

All parties are urged to respect the confidential nature of these discussions.

Tips for successful communication when using this form

Ask yourself these questions:

- Stick to the facts: What are the objective facts that describe the situation?
- Is there a policy in the student handbook or class syllabus that relates to the problem?
- Can you request a meeting that is in a safe location and provides time for all parties to prepare?
- Do you have any documentation to support the claims made about the problem?

Remember: Rarely do problems get resolved when emotions are high. Give yourself—and others—time to think about it prior to the conversation. Count to ten. Breathe.

- Separate the problem from the person.
- Focus on shared interests.
- Generate as many solutions as possible.
- Identify solutions that both parties would agree are viable options for resolution.



Degree and Certificate Information & Requirements

www.clackamas.edu



Education That Works



Graduation Requirements

Requirements for degrees, certificates and diplomas are subject to approval by the Oregon Department of Education. Students are encouraged to submit a Petition for Graduation TWO TERMS prior to their anticipated term of completion. Petitions submitted before the sixth week of each term will be reviewed during the term submitted. Petitions submitted after the sixth week will be handled in date order and may be processed for the current term as time allows. Forms are available at www.clackamas.edu/forms.

General Requirements

(applies to all degrees, certificates and diplomas)

You will be evaluated for degree and/or certificate requirements under the current catalog unless a request for a prior catalog year is indicated on your Petition for Graduation form. You must meet the following conditions to request an exception:

- You must complete 25% of your degree and/or certificate requirements at CCC.
- You must petition for graduation within one calendar year from the date you completed requirements for the degree and/or certificate.
- The prior catalog cannot be more than five years old (e.g. in 2020-21, the oldest catalog that can be used is 2015-16).
- For the catalog selected, you must have earned at least one credit in that calendar year.
- You must have earned at least one college credit at CCC during 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. Student must meet all the requirements for each degree or certificate.

Please note that a separate Petition for Graduation form must be filed for each individual associate 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 transcripts to Graduation Services as soon as possible
- Have coursework from other colleges evaluated early
- Talk with an Academic Advisor early and often
- Complete all pre-requisites for required courses
- If you change your mind about what you are studying, notify Enrollment Services as soon as possible
- 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
- Be sure to submit a Petition for Graduation form two terms before you think you will be finished with classes so CCC can confirm you have met all of your degree or certificate graduation requirements

Graduation Ceremony

Formal graduation activities are held at the end of Spring term. Students who complete degree or certificate requirements during preceding terms are invited to participate in the Spring term commencement ceremony. Two ceremonies are planned, the first for High School Diploma and GED graduates, and a second for certificate and degree program graduates.

Honors status is granted to students achieving a cumulative GPA of 3.5 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. See page 84 for an alphabetical listing of the following Career Technical programs.

DEGREES	Career Pathway	less than one year	one year	AAS	AS
Accounting Assistant AAS				p. 85	
Accounting Clerk Certificate			p. 86		
Administrative Professional AAS				p. 86	
Administrative Assistant Certificate			p. 87		
Administrative Assistant Training Certificate		p. 88			
Apprenticeship (limited entry)	p. 88		p. 88	p. 88	
Construction Trades, General Apprenticeship AAS (limited entry)				p. 89	
Construction Trades General Apprenticeship Certificate (limited entry)			p. 89		
Manual Apprenticeship Trades Certificate (limited entry)	p. 89				
Electrician Apprenticeship Technologies AAS				p. 89	
Electrician Apprenticeship Technologies Certificate			p. 90		
Limited License Electrician Apprenticeship Technologies Certificate	p. 90				
Auto Body/Collision Repair and Refinishing Technology AAS				p. 91	
Auto Body/Collision Repair and Refinishing Technology Certificate	p. 92				
Automotive Service Technology AAS				p. 92	
Under Car Technician – Automatic Transmission Certificate	p. 94				
Under Car Technician – Manual Transmission Certificate	p. 94				
Under Hood Technician Certificate	p. 95				
Basic Engine Technician Certificate		p. 95			
Biology AS					p. 56
Business AAS				p. 96	
Business Management Certificate			p. 97		
Management Fundamentals Certificate	p. 98				
Career & Technical Education (CTE) Licensure Prep Certificate			p. 98		
Clinical Laboratory Assistant/Phlebotomy Certificate (limited entry)			p. 99		
Basic Health Sciences Certificate	p. 100				
Computer-Aided Manufacturing AAS				p. 101	
Computer & Network Administration AAS				p. 102	
Computer & Network Administration Certificate			p. 102		
Computer Application Specialist Certificate			p. 103		
Computer Science AS					p. 58
Criminal Justice AAS				p. 104	
Criminal Justice AAS, Corrections Option				p. 105	
Dental Assistant Certificate (limited entry)			p. 107		
Digital Media Communications AAS				p. 108	
Entry Level Journalist Certificate	p. 109				
Video Production Technician Certificate	p. 110				
Early Childhood Education & Family Studies AAS				p. 110	
Early Childhood Education & Family Studies Certificate			p. 111		
Electronics Engineering Technology AAS				p. 112	
Electronics Engineering Technology Certificate			p. 112		
Emergency Medical Technology Certificate			p. 114		
Employment Skills Training Certificate		p. 114			
Engineering AS					p. 59
English AS					p. 70
First-Line Supervisor Fundamentals Certificate	p. 115				
Fitness Technology Certificate			p. 115		
Geographic Information Systems (GIS) Technology Certificate			p. 116		
Geology AS					p. 73

continued...

DEGREES	Career Pathway	less than one year	one year	AAS	AS
Gerontology Certificate			p. 117		
Gerontology for Health Care Professionals Certificate	p. 118				
Nursing Assistant - Gerontology Specialist Certificate	p. 118				
Horticulture AS					p. 79
Horticulture AAS				p. 119	
Horticulture Certificate			p. 119		
Irrigation Technician Certificate	p. 121				
Plant Health Management Certificate	p. 121				
Human Resource Management Certificate			p. 122		
Human Resource Management Essentials Certificate	p. 122				
Human Services Generalist AAS				p. 123	
Human Services Generalist Certificate			p. 123		
Alcohol & Drug Counselor Certificate	p. 124				
Industrial Maintenance Technology AAS				p. 125	
Industrial Maintenance Technology Certificate			p. 125		
Industrial Maintenance Technology Mechanical Maintenance Certificate			p. 126		
Juvenile Corrections Certificate			p. 106		
Landscape Management AAS				p. 127	
Landscape Management AAS, Arboriculture Option				p. 128	
Landscape Practices Certificate		p. 129			
Machine Tool Technology AAS				p. 130	
Machine Tool Technology Certificate			p. 131		
Mastercam Certificate		p. 132			
CNC Machining Technician Certificate	p. 132				
Marketing Certificate			p. 132		
Integrated Marketing & Promotion Certificate	p. 133				
Medical Assistant Certificate (limited entry)			p. 133		
Medical Billing and Coding Certificate (limited entry)		p. 135			
Microelectronics Systems Technology AAS				p. 136	
Microelectronics Systems Technology Certificate			p. 136		
Music AS					p. 75
Music Performance & Technology AAS				p. 137	
Music Technology Certificate			p. 139		
Nursing (RN) AAS (limited entry)				p. 140	
Occupational Skills Training Certificate			p. 144		
Organic Farming Certificate			p. 144		
Professional Truck Driver Certificate		p. 145			
Project Management AAS				p. 145	
Project Management Certificate		p. 146			
Project Management Leadership & Communication Certificate	p. 147				
Project Management Tools & Techniques Certificate	p. 147				
Renewable Energy Technology AAS				p. 148	
Renewable Energy Technology Certificate			p. 148		
Energy Systems Maintenance Technician Certificate	p. 149				
Retail Management Certificate		p. 149			
Water & Environmental Technology AAS				p. 150	
Water & Environmental Technology Certificate			p. 150		
High Purity Water Certificate		p. 151			
Web Design & Development AAS				p. 152	
Web Design Certificate			p. 153		
Welding Technology AAS				p. 153	
Welding Technology Certificate			p. 154		
Entry Level Welding Technician Certificate	p. 155				
Wildland Fire Science Certificate			p. 156		
Wilderness Survival & Leadership Certificate	p. 156				
Wildland Fire Forestry Certificate	p. 157				
Wildland FireFighter 1 Certificate	p. 157				
Wildland Fire Management AAS				p. 158	

Degrees

Associate of Arts Oregon Transfer (AAOT)

The 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.

Associate of Science Oregon Transfer - Business (ASOT)

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.

Associate of Science Oregon Transfer - Computer Science (ASOT)

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.

AAOT/ASOT Student Learning Outcomes

The AAOT/ASOT transfer degrees at Clackamas Community College are designed to prepare students to succeed after transferring to a public university in Oregon and to attain GPAs comparable to students who begin their education at those institutions. Students who attain these degrees will possess a wide range of knowledge and skills, as described in the categories below.

As a result of completing the AAOT, students should be able to:

ARTS & LETTERS*

- 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.

* "Arts & Letters" refers to works of art, whether written, crafted, designed, or performed and documents of historical or cultural significance.

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*

- 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.

*Information Literacy outcomes and criteria will be embedded in the Writing Foundational Requirements courses. At Clackamas, WR-121 and WR-122 meet that requirement.

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.

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.

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.

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 page 78 for Student Guide information. Students interested in the OTM should meet with an academic advisor in Student Services, see page 18.

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 page 47-48).

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

Career Pathway Certificates of Completion programs are designed to acknowledge a 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 and CC 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 page 46 for additional general requirements for all degrees and certificates
- Specific discipline requirements are listed on pages 81-158.



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	4
(Shall include the equivalent of one unit in written composition.)	
Mathematics	3
Science	3
Social Studies	3
Health Education	1
Physical Education	1
Career & Technical Education, the Arts, and/or Second Language (any one area or in combination)	3
Electives	6
Total:	24

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.



Student Guide 2020-2021
Associate of Arts Oregon Transfer Degree (AAOT)

Requirements	Courses
	<i>Choose from the following courses to meet degree requirements. All courses must be passed with a C or better.</i>
Writing 8 credits, information literacy will be included in the Writing Requirement.	WR-121 and either 122, or 227
Oral Communication - 1 course	COMM-111
Mathematics - 1 course	MTH-105, 111, 112, 211, 212, 213, 243, 244, 251, 252, 253, 254, 256, 261
Health & Physical Education 1 or more courses totaling at least 3 credits.	PE-185, 194, 240, 260, 270, 294, 294A HE-201, 202, 204, 205, 207, 223, 249, 250, 252, 255, 261 HPE-295
GENERAL EDUCATION DISTRIBUTION AREA Arts & Letters • 3 courses from 2 or more disciplines. • Each course must be at least 3 credits.	ART-101, 115, 116, 117, 131, 204*, 205*, 206*, 232, 233, 250, 251, 252, 253, 254, 255, 257, 281, 282, 283, 284, 285, 286, 291, 292, 293 ASL-201*, 202*, 203* BA-130 COMM-112, 126*, 140*, 212, 218*, 219*, 227 DMC-194, 195 ENG-104, 105, 106, 107*, 108*, 109*, 116, 121, 130, 194, 195, 199, 201, 202, 204, 205, 213*, 218, 226, 240*, 241*, 250*, 251*, 252*, 253, 254, 255, 260, 261*, 266, 270, 271*, 272*, 273*, 295*, 296 FR-201*, 202*, 203* GER-201*, 202*, 203* HUM-160*, 235*, 237*, 240*, 241*, 242* J-211, 216 MUS-105, 111, 112, 113, 205, 206*, 211, 212, 213 PHL-101*, 102*, 103*, 205*, 210*, 213*, 216* R-101*, 102*, 103*, 204*, 210*, 211*, 212* SPN-201*, 202*, 203* SSC-237* TA-101, 102, 103, 111, 122, 123, 141, 142, 143, 153 WR-241*, 242, 243, 244*, 245, 247, 248, 262, 263, 265, 270 WS-101*
GENERAL EDUCATION DISTRIBUTION AREA Social Science • 4 courses from 2 or more disciplines. • Each course must be at least 3 credits.	ANT-101, 102*, 103*, 231*, 232* CJA-101, 201 EC-200, 201, 202 GEO-100*, 110*, 130*, 208* HE-163, 164 HST-101*, 102*, 103*, 130*, 131*, 132*, 136*, 137*, 138*, 199*, 201*, 202*, 203* HUM-237* PS-200*, 201, 203, 204, 205, 225, 297 PSY-200, 205*, 215, 219*, 231* SOC-204*, 205*, 206*, 210*, 225* SSC-160*, 235*, 237*, 240*, 241*, 242* WS-101*
GENERAL EDUCATION DISTRIBUTION AREA 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.	ASC-175, 176, 177 BI-101, 102, 103, 112, 160, 160L, 165C, 165CL, 165D, 175, 176, 177, 204, 211, 212, 213, 231, 232, 233, 234 CH-104, 105, 106, 112, 114, 221, 222, 223 ESR-171, 172, 173 G-101, 102, 103, 145, 148, 201, 202, 203 GS-104, 105, 106, 107 MTH-105, 111, 112, 211, 212, 213, 243, 244, 251, 252, 253, 254, 256, 261 PH-121, 122, 123, 201, 202, 203, 211, 212, 213 Z-201, 202, 203
Cultural Literacy - 1 course	Courses meeting the Cultural Literacy requirement are noted with an asterisk.
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 Elective Course List for AAOT, ASOT-Business, and ASOT-Computer Science, pages 160-161, for a listing of courses that may be included.

* Course meets Cultural Literacy requirement.

See course descriptions, pages 162-260, for course requisites.

Note: No course may be used to satisfy more than one requirement or distribution area.

Student Guide 2020-2021

Associate of Science Oregon Transfer Degree–Business (ASOT–Business)

Requirements	Courses
	<i>Choose from the following courses to meet degree requirements. All courses must be passed with a C or better.</i>
Writing 8 credits, information literacy will be included in the Writing Requirement.	WR-121 and either 122, or 227
Oral Communication 1 course	COMM-111
Mathematics Minimum of 3 courses, including one course of statistics	MTH-111 or higher, 4 credits of statistics (MTH-243 or MTH-244) are required.
Cultural Literacy • 1 course • Each course must be at least 3 credits.	Courses meeting the Cultural Literacy requirement are noted with an asterisk.
GENERAL EDUCATION DISTRIBUTION AREA Arts & Letters • 3 courses from 2 or more disciplines. • Each course must be at least 3 credits.	ART-101, 115, 116, 117, 131, 204*, 205*, 206*, 232, 233, 250, 251, 252, 253, 254, 255, 257, 281, 282, 283, 284, 285, 286, 291, 292, 293 ASL-201*, 202*, 203* BA-130 COMM-112, 126*, 140*, 212, 218*, 219*, 227 DMC-194, 195 ENG-104, 105, 106, 107*, 108*, 109*, 116, 121, 130, 194, 195, 199, 201, 202, 204, 205, 213*, 218, 226, 240*, 241*, 250*, 251*, 252*, 253, 254, 255, 260, 261*, 266, 270, 271*, 272*, 273*, 295*, 296 FR-201*, 202*, 203* GER-201*, 202*, 203* HUM-160*, 235*, 237*, 240*, 241*, 242* J-211, 216 MUS-105, 111, 112, 113, 205, 206*, 211, 212, 213 PHL-101*, 102*, 103*, 205*, 210*, 213*, 216* R-101*, 102*, 103*, 204*, 210*, 211*, 212* SPN-201*, 202*, 203* SSC-237* TA-101, 102, 103, 111, 122, 123, 141, 142, 143, 153 WR-241*, 242, 243, 244*, 245, 247, 248, 262, 263, 265, 270 WS-101*
GENERAL EDUCATION DISTRIBUTION AREA Social Science • 4 courses from 2 or more disciplines, including EC-201 and EC-202 completed with a grade of C- or better. • Each course must be at least 3 credits.	EC-201 and EC-202 and courses from the following list: ANT-101, 102*, 103*, 231*, 232* CJA-101, 201 EC-200, 201, 202 GEO-100*, 110*, 130*, 208* HE-163, 164 HST-101*, 102*, 103*, 130*, 131*, 132*, 136*, 137*, 138*, 199*, 201*, 202*, 203* HUM-237* PS-200*, 201, 203, 204, 205, 225, 297 PSY-200, 205*, 215, 219*, 231* SOC-204*, 205*, 206*, 210*, 225* SSC-160*, 235*, 237*, 240*, 241*, 242* WS-101*
GENERAL EDUCATION DISTRIBUTION AREA 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.	ASC-175, 176, 177 BI-101, 102, 103, 112, 160, 160L, 165C, 165CL, 165D, 175, 176, 177, 204, 211, 212, 213, 231, 232, 233, 234 CH-104, 105, 106, 112, 114, 221, 222, 223 ESR-171, 172, 173 G-101, 102, 103, 145, 148, 201, 202, 203 GS-104, 105, 106, 107 PH-121, 122, 123, 201, 202, 203, 211, 212, 213 Z-201, 202, 203
Business Specific Minimum 20 credits, with a grade of C or better	BA-101, 131, 211, 213 and 226
Elective and/or University Specific Requirements	Determined by choice of transfer institution. Please contact your transfer advisor for assistance. 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 Elective Course List for AAOT, ASOT-Business, and ASOT-Computer Science, pages 160-161, for a listing of courses that may be included.

* Course meets Cultural Literacy requirement.

See course descriptions, pages 162-260, for course requisites.

Note: No course may be used to satisfy more than one requirement or distribution area.

Student Guide 2020-2021
**Associate of Science Oregon Transfer Degree – Computer Science
 (ASOT–Computer Science)**

Requirements	Courses
	<i>Choose from the following courses to meet degree requirements. All courses must be passed with a C or better.</i>
Writing 8 credits, information literacy will be included in the Writing Requirement.	WR-121, and either 122 or 227
Oral Communication - 1 course	COMM-111
Mathematics - 2 courses	MTH-251 and MTH-252.
Health/Wellness/Fitness 1 or more HE, HPE or PE courses totaling at least 3 credits.	PE-185, 194, 240, 260, 270, 294, 294A HE-201, 202, 204, 205, 207, 223, 249, 250, 252, 255, 261 HPE-295
GENERAL EDUCATION DISTRIBUTION AREA Arts & Letters • 3 courses from 2 or more disciplines. • Each course must be at least 3 credits.	ART-101, 115, 116, 117, 131, 204*, 205*, 206*, 232, 233, 250, 251, 252, 253, 254, 255, 257, 281, 282, 283, 284, 285, 286, 291, 292, 293 ASL-201*, 202*, 203* BA-130 COMM-112, 126*, 140*, 212, 218*, 219*, 227 DMC-194, 195 ENG-104, 105, 106, 107*, 108*, 109*, 116, 121, 130, 194, 195, 199, 201, 202, 204, 205, 213*, 218, 226, 240*, 241*, 250*, 251*, 252*, 253, 254, 255, 260, 261*, 266, 270, 271*, 272*, 273*, 295*, 296 FR-201*, 202*, 203* GER-201*, 202*, 203* HUM-160*, 235*, 237*, 240*, 241*, 242* J-211, 216 MUS-105, 111, 112, 113, 205, 206*, 211, 212, 213 PHL-101*, 102*, 103*, 205*, 210*, 213*, 216* R-101*, 102*, 103*, 204*, 210*, 211*, 212* SPN-201*, 202*, 203* SSC-237* TA-101, 102, 103, 111, 122, 123, 141, 142, 143, 153 WR-241*, 242, 243, 244*, 245, 247, 248, 262, 263, 265, 270 WS-101*
GENERAL EDUCATION DISTRIBUTION AREA Social Science • 4 courses from 2 or more disciplines. • Each course must be at least 3 credits.	ANT-101, 102*, 103*, 231*, 232* CJA-101, 201 EC-200, 201, 202 GEO-100*, 110*, 130*, 208* HE-163, 164 HST-101*, 102*, 103*, 130*, 131*, 132*, 136*, 137*, 138*, 199*, 201*, 202*, 203* HUM-237* PS-200*, 201, 203, 204, 205, 225, 297 PSY-200, 205*, 215, 219*, 231* SOC-204*, 205*, 206*, 210*, 225* SSC-160*, 235*, 237*, 240*, 241*, 242* WS-101*
GENERAL EDUCATION DISTRIBUTION AREA Science/Math/Computer Science • 4 courses from at least 2 disciplines, including at least 3 lab courses in biological or physical science. • Each course must be at least 3 credits.	ASC-175, 176, 177 BI-101, 102, 103, 112, 160, 160L, 165C, 165CL, 165D, 175, 176, 177, 204, 211, 212, 213, 231, 232, 233, 234 CH-104, 105, 106, 112, 114, 221, 222, 223 ESR-171, 172, 173 G-101, 102, 103, 145, 148, 201, 202, 203 GS-104, 105, 106, 107 MTH-105, 111, 112, 211, 212, 213, 243, 244, 251, 252, 253, 254, 256, 261 PH-121, 122, 123, 201, 202, 203, 211, 212, 213 Z-201, 202, 203
Cultural Literacy - 1 course • Each course must be at least 3 credits.	Courses meeting the Cultural Literacy requirement are noted with an asterisk.
Computer Science Specific Requirements • Minimum of 16 credits in Computer Science consisting of these courses. • Each course in this section must be completed with a grade of C or better. • Each course must be at least 3 credits.	CS-160, CS-161, CS-162, CS-260
Elective and/or University Specific Requirements	Determined by choice of transfer institution. Contact your transfer advisor for assistance. 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 Elective Course List for AAOT, ASOT-Business, and ASOT-Computer Science, pages 160-161 for a listing of courses that may be included.

See course descriptions, pages 162-260 for course requisites.

Note: No course may be used to satisfy more than one requirement or distribution area.

Student Guide 2020-2021
Associate of Science Degree (AS)

	Requirements	Courses
Foundational Skills	Writing - 2 courses	WR -121 and 122 or 227
	Mathematics - 1 course	MTH -105, 111, 112, 251, 252
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 course electives.

Total minimum of 90 credits required.

Notes:

1. All courses must be 100 level or higher.
2. All courses must be at least three credits.
3. All courses must be passed with a grade of C or better.
4. Students must establish a cumulative GPA of 2.0 or above
5. No course may be used to satisfy more than one requirement or distribution area.
6. Submit a Petition for Graduation form to Graduation Services two terms prior to when you expect to graduate.

Associate of Science Degrees

Biology

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.

CAREERS

Career pathways include pre-pharmacy, pre-medical, pre-veterinarian, biological and zoology research fields, wildlife and fisheries management, and a wide range of related fields.

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.

For information contact Tory Blackwell, 503-594-3646 or toryb@clackamas.edu, or Polly Schulz, 503-594-3358 or pollys@clackamas.edu

Associate of Science with an emphasis in Biology with Oregon State University

PROGRAM CODE: AS.OSUBIOLOGY

PROGRAM 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-121	English Composition	4
WINTER TERM		
BI-212	General Biology for Science Majors (Animal Biology)	5
CH-222	General Chemistry	5
MTH-251	Calculus I	5

SPRING TERM

BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
COMM-111	Public Speaking	
	or COMM-112 Persuasive Speaking	
	or COMM-218 Interpersonal Communication	4
CH-223	General Chemistry	5

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
CH-241*	Organic Chemistry I	5
PH-201	General Physics	
	or PH-211 General Physics with Calculus	5
WR-122	English Composition	
	or WR-227 Technical Report Writing	4
— —	Core electives	3
WINTER TERM		
CH-242*	Organic Chemistry II	5
MTH-252	Calculus II	5
PH-202	General Physics	
	or PH-212 General Physics with Calculus	5
SPRING TERM		
CH-243*	Organic Chemistry III	5
HPE-295	Health & Fitness for Life	3
PH-203	General Physics	
	or PH-213 General Physics with Calculus	5
— —	Core electives	3
<i>Credits required for degree</i>		92

*Organic Chemistry —satisfies degree requirement but does not transfer at 300 level credits unless student passes the ACS organic exam. OSU highly recommends taking the ACS organic exam. Transfers as a combination of CH-331, 332 & 337.

CORE ELECTIVES

ANT-101, 102, 103, 231, 232
ART-101, 204, 205, 206
ASC-175, 176, 177
BI-101, 102, 103, 175, 176, 177, 204, 211, 212, 213, 234
CH-104, 105, 114, 221, 222, 223
DMC-194
EC-201, 202
ENG-104, 105, 106, 107, 108, 109, 201, 202, 204, 205, 213, 240, 241, 250, 251, 252, 253, 254, 255
ESR-171, 172, 173
G-101, 102, 103, 201, 202, 203
GEO-100, 110, 130, 208
GS-104, 105, 106, 107
HST-101, 102, 103, 201, 202, 203
MUS-206
PH-121, 122, 123, 201, 202, 203, 211, 212, 213
PHL-102
PS-200, 201, 203, 204, 205, 225
PSY-110, 200, 205, 219, 231
R-101, 102, 103, 210, 204
SOC-204, 205, 206, 225
Z-201, 202, 203

Associate of Science with an emphasis in Biology with Portland State University

PROGRAM CODE: AS.PSUBIOLOGY

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
BI-211	General Biology for Science Majors (Cellular Biology)	5
CH-221	General Chemistry	5
WR-121	English Composition	4

WINTER TERM

BI-212	General Biology for Science Majors (Animal Biology)	5
CH-222	General Chemistry	5
WR-122	English Composition	
or WR-227	Technical Report Writing	4
— —	Core elective	4

SPRING TERM

BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
CH-223	General Chemistry	5
COMM-111	Public Speaking	
or COMM-140	Introduction to Intercultural Communication	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
CH-241	Organic Chemistry I or Science elective	5
MTH-243	Statistics I	
or MTH-251	Calculus I	4-5
PH-201	General Physics	5
— —	Core elective	3

WINTER TERM

CH-242	Organic Chemistry II or Science elective	5
MTH-244	Statistics II	
or MTH-252	Calculus II	4-5
— —	Core elective	3

SPRING TERM

CH-243	Organic Chemistry III or Science elective	5-7
— —	General Education Science elective	4-5
— —	Core elective	6

Credits required for degree 90-95

CORE ELECTIVE

Any General Education course in the respective distribution areas of Arts & Letters or Social Sciences listed on page 52 of this catalog.

SCIENCE ELECTIVE

Minimum 14 science elective credits in **G-201, G-202, G-203, PH-202 & PH-203**. Recommended: **CH-242 & CH-243**

GENERAL EDUCATION SCIENCE ELECTIVE

Any general education science course in **ASC, BI, CH, ESR, G, GS, PH, Z**

Associate of Science with an emphasis in Biology with University of Oregon

PROGRAM CODE: AS.UO BIOLOGY

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
BI-211	General Biology for Science Majors (Cellular Biology)	5
CH-221	General Chemistry	5
WR-121	English Composition	4

WINTER TERM

BI-212	General Biology for Science Majors (Animal Biology)	5
CH-222	General Chemistry	5
WR-122	English Composition	4

SPRING TERM

BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
CH-223	General Chemistry	5
CS-120	Survey of Computing	
or MTH-243	Statistics I (recommended)	4
— —	Core electives	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
CH-241	Organic Chemistry I	5
MTH-251	Calculus I	5
PH-201	General Physics	5
— —	Core electives	3

WINTER TERM

CH-242	Organic Chemistry II	5
MTH-252	Calculus II	5
PH-202	General Physics	5

SPRING TERM

CH-243	Organic Chemistry III	5
PH-203	General Physics	5
— —	Core electives	3

Credits required for degree 92

CORE ELECTIVES

Any General Education course in the respective distribution areas of Arts & Letters or Social Sciences listed on page 52 of this catalog.



Computer Science

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.

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

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.

For information contact Jen Miller, 503-594-3138 or jen.miller@clackamas.edu, or Richard Albers, 503-594-3166 or richa@clackamas.edu

Associate of Science with an emphasis in Computer Science with Portland State University

PROGRAM CODE: AS.PSUCOMPSCI

PREREQUISITES

Students entering the Associate of Science degree are expected to have the following courses complete, or to place at a level higher than the courses indicated:

- MTH-112 Trigonometry and Pre-Calculus

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
BI-211	General Biology for Science Majors (Cellular Biology)	
	or CH-221 General Chemistry	
	or PH-211 General Physics with Calculus	5
CS-161	Computer Science I	4
MTH-251	Calculus I	5
WINTER TERM		
BI-212	General Biology for Science Majors (Animal Biology)	
	or CH-222 General Chemistry	
	or PH-212 General Physics with Calculus	5
CS-162	Computer Science II	4
MTH-252	Calculus II	5
SPRING TERM		
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	
	or CH-223 General Chemistry	
	or PH-213 General Physics with Calculus	5
CS-140L	Linux for Programmers	4
CS-260	Data Structures	4
MTH-253	Calculus III	5
SUMMER TERM		
COMM-111	Public Speaking	4
WR-121	English Composition	4
— —	Arts & Letters or Social Science electives	3-4
— —	Arts & Letters or Social Science electives	3-4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
CS-201	Computer Systems II	4
— —	Arts & Letters or Social Science electives	3-4
— —	Science electives	4
WINTER TERM		
CS-202	Program Structures	4
CS-250	Discrete Structures I	4
WR-227	Technical Report Writing	4
— —	Computer Science recommended electives	3-4
SPRING TERM		
CS-251	Discrete Structures II	4
MTH-261	Linear Algebra	4
— —	Arts & Letters or Social Science electives	3-4
— —	Computer Science recommended electives	3-4
<i>Credits required for degree</i>		100-106

ARTS & LETTERS OR SOCIAL SCIENCE ELECTIVES

Art (**ART**), Music (**MUS**) or Theatre Arts (**TA**) courses 100 level or above relating to history and appreciation, not performance, or any 100 level or above Arts & Letters or Social Science course in the prefixes of:

ARTS & LETTERS

ASL, BA, COMM, ENG, FR, GER, HUM, J, MUP, PHL, R, SPN, WR

SOCIAL SCIENCE

ANT, EC, GEO, HST, PS, PSY, SOC, SSC, WS

COMPUTER SCIENCE RECOMMENDED ELECTIVES

Students must choose 6-8 credits from the following courses: CS-160*, CS-125H, CS-133S, CS-234J, and CS-234P, CS-240L.

*Highly recommended

SCIENCE ELECTIVES

Any General Education science course listed under prefixes: **BI**, **CH**, **ESR**, **G**, and **PH** on page 52 of this catalog.

Engineering

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, Oregon Tech (Oregon Institute of Technology) or George Fox University.

PROGRAM OUTCOMES

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

- identify the broad context of engineering problems, including describing the problem conditions, identifying possible contributing factors, and generating alternative solution strategies;
- identify the fundamental elements of engineering design, including associated safety, quality, schedule and cost considerations;
- 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;
- communicate the importance of professional and ethical responsibilities of engineers, and be aware of codes and other sources of guidance for professionally ethical decision making.

For information contact Eric Lee, 503-594-6163 or elee@clackamas.edu

Associate of Science with an emphasis in Engineering with Portland State University

Emphasis in Civil/Environmental Engineering

PROGRAM CODE: AS.PSUCIVENVNGR

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4
WINTER TERM		
BI-204*	Elementary Microbiology	4
CH-222	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
SPRING TERM		
COMM-111	Public Speaking	4
GIS-201	Introduction to Geographic Information Systems	3
MTH-254	Vector Calculus	5
WR-227	Technical Report Writing	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ENGR-211	Statics	4
PH-211	General Physics with Calculus	5
— —	Arts & Letters elective	4
— —	Social Science elective	4
WINTER TERM		
CDT-103	Computer-Aided Drafting	3
ENGR-212	Dynamics	4
MTH-256	Differential Equations	4
PH-212	General Physics with Calculus	5
SPRING TERM		
ENGR-213	Strength of Materials	4
MTH-261	Linear Algebra	4
PH-213	General Physics with Calculus	5
— —	Arts & Letters or Social Science elective	4

Credits required for degree

96-100

*Environmental Track Only



Continued

Engineering continued...

ARTS & LETTERS ELECTIVES

All courses in **ASL, COMM, ENG, FR, GER, HUM, PHL, SPN, WR**.

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. The accepted courses at CCC are:

ART-101, 205, 206

J-211

MUS-105, 141, 205, 206, 230

TA-101, 102

SOCIAL SCIENCE ELECTIVES

All courses in **ANT, EC, GEO, HST, PS, PSY, SOC, SSC**, and **WS**.

Recommended: Civil Engineers should take Plane Surveying (CE-211/CS-212) at PSU before beginning their junior year at PSU. The course is offered in the spring and summer terms at PSU. It is also recommended that a civil/environmental engineering student complete one additional Arts & Letters or Social Science elective.

Emphasis in Electrical/Computer Engineering

PROGRAM CODE: AS.PSUELECCOMPENGR

PROGRAM 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

WINTER TERM

CS-162	Computer Science II	4
ENGR-112	Engineering Programming	3
ENGR-171	Digital Logic	4
MTH-252	Calculus II	5

SPRING TERM

COMM-111	Public Speaking	4
ENGR-271	Digital Systems	4
MTH-261	Linear Algebra	4
WR-121	English Composition	4

SUMMER TERM

WR-122	English Composition	4
or WR-227	Technical Report Writing	

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ENGR-221	Electrical Circuit Analysis I	4
MTH-254*	Vector Calculus	5
PH-211	General Physics with Calculus	5
— —	Arts & Letters elective	4

WINTER TERM

ENGR-222	Electrical Circuit Analysis II	4
MTH-256	Differential Equations	4
PH-212	General Physics with Calculus	5
— —	Social Science elective	4

SPRING TERM

ENGR-223	Electrical Circuit Analysis III	4
MTH-253	Calculus III	5
PH-213	General Physics with Calculus	5
— —	Arts & Letters or Social Science elective	4

Credits required for degree 101-106

*Electrical Track only

ARTS & LETTERS ELECTIVES

All courses in **ASL, COMM, ENG, FR, GER, HUM, PHL, SPN, WR**. 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. The accepted courses at CCC are:

ART-101, 205, 206

J-211

MUS-105, 141, 205, 206, 230

TA-101, 102

SOCIAL SCIENCE ELECTIVES

All courses in **ANT, EC, GEO, HST, PS, PSY, SOC, SSC**, and **WS**.

Emphasis in Mechanical Engineering

PROGRAM CODE: AS.PSUMECHENGR

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4

WINTER TERM

CH-222	General Chemistry	5
ENGR-112	Engineering Programming	3
ENGR-231	Properties of Materials	4
MTH-252	Calculus II	5

SPRING TERM

ENGR-115	Engineering Graphics	3
COMM-111	Public Speaking	4
MTH-254	Vector Calculus	5
WR-122	English Composition	4
or WR-227	Technical Report Writing	

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ENGR-211	Statics	4
MTH-261	Linear Algebra	4
PH-211	General Physics with Calculus	5
— —	Arts & Letters elective	4

WINTER TERM

ENGR-212	Dynamics	4
MTH-256	Differential Equations	4
PH-212	General Physics with Calculus	5
— —	Social Science elective	4

SPRING TERM

ENGR-201	Electrical Fundamentals	4
ENGR-213	Strength of Materials	4
PH-213	General Physics with Calculus	5
— —	Arts & Letters or Social Science elective	4

Credits required for degree 101

ARTS & LETTERS ELECTIVES

All courses in **ASL, COMM, ENG, FR, GER, HUM, PHL, SPN, WR.**

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.

The accepted courses at CCC are:

ART-101, 205, 206

J-211

MUS-105, 141, 205, 206, 230

TA-101, 102

SOCIAL SCIENCE ELECTIVES

All courses in **ANT, EC, GEO, HST, PS, PSY, SOC, SSC,** and **WS.**

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 Biology, Chemistry, Environmental Science, Geology, or Physics.

Associate of Science with an emphasis in Engineering with Oregon State University Emphasis in Biological Engineering

PROGRAM CODE: AS.OSUBIOLENGR

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
COMM-111	Public Speaking	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4
WINTER TERM		
BI-204	Elementary Microbiology	4
CH-221	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
SPRING TERM		
CH-222	General Chemistry	5
MTH-254	Vector Calculus	5
WR-227	Technical Report Writing	4
SUMMER TERM		
CH-223	General Chemistry	5
MTH-256	Differential Equations	4
— —	Social Processes elective	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
CH-241	Organic Chemistry I	5
ENGR-211	Statics	4
PH-211	General Physics with Calculus	5
WINTER TERM		
CH-242	Organic Chemistry II	5
MTH-253	Calculus III	5
PH-212	General Physics with Calculus	5
SPRING TERM		
CH-243	Organic Chemistry III	5
ENGR-201	Electrical Fundamentals	4
PH-213	General Physics with Calculus	5
— —	Western Culture elective	4

Credits required for degree

107

SOCIAL PROCESSES ELECTIVE:

ANT-103

EC-201, 202

HST-101, 102, 103

PS-201, 204, 205, 225

PSY-110, 200, 205, 219, 231

SOC-204, 205, 206

WESTERN CULTURE ELECTIVE

ART-204, 205, 206

ENG-107, 108, 109, 201, 202, 204, 205, 250, 251, 253, 254, 255

GEO-208

HST-101, 102, 103, 132, 201, 202, 203

PHL-102

R-204

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 ELECTIVE

ANT-231, 232

ENG-213, 252

R-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 204, 205, 206

DMC-194

ENG-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 204, 205, 213, 241, 250, 251, 252, 253, 254, 255, 260, 270

MUS-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203

SOC-225

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Chemical Engineering

PROGRAM CODE: AS.OSUCHEMENGR

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
COMM-111	Public Speaking	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4
WINTER TERM		
CH-221	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
WR-227	Technical Report Writing	4
SPRING TERM		
CH-222	General Chemistry	5
MTH-254	Vector Calculus	5
— —	Social Processes elective	4
SUMMER TERM		
CH-223	General Chemistry	5
MTH-256	Differential Equations	4

Continued

Engineering continued...

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
CH-241	Organic Chemistry I	5
ENGR-211	Statics	4
PH-211	General Physics with Calculus	5
WINTER TERM		
CH-242	Organic Chemistry II	5
MTH-253	Calculus III	5
PH-212	General Physics with Calculus	5
SPRING TERM		
CH-243	Organic Chemistry III	5
ENGR-201	Electrical Fundamentals	4
PH-213	General Physics with Calculus	5
— —	Western Culture elective	4
<i>Credits required for degree</i>		103

SOCIAL PROCESSES ELECTIVE

ANT-103
 EC-201, 202
 HST-101,102,103
 PS-201, 204, 205, 225
 PSY-110, 200, 205, 219, 231
 SOC-204, 205, 206

WESTERN CULTURE ELECTIVE

ART-204, 205, 206
 ENG-107,108,109, 201, 202, 204, 205, 250, 251, 253, 254, 255
 GEO-208
 HST-101,102,103, 132, 201, 202, 203
 PHL-102
 R-204
 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 ELECTIVE

ANT-231, 232
 ENG-213, 252
 R-101,102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 204, 205, 206
 DMC-194
 ENG-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 204, 205, 213, 241, 250, 251, 252, 253, 254, 255, 260, 270
 MUS-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203
 SOC-225

BIOLOGICAL SCIENCE ELECTIVE

BI-101, 102, 103, 175, 176, 177, 204, 211, 212, 213, 234
 ESR-171, 172, 173
 Z-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Civil Engineering

PROGRAM CODE: AS.OSUCIVILENGR

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4
WINTER TERM		
CDT-103	Computer-Aided Drafting I	3
CH-222	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
SPRING TERM		
COMM-111	Public Speaking	4
EC-201	Principles of Economics: MICRO	4
MTH-254	Vector Calculus	5
WR-227	Technical Report Writing	4
SUMMER TERM		
GIS-201	Introduction to Geographic Information Systems	3
MTH-256	Differential Equations	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ENGR-211	Statics	4
PH-211	General Physics with Calculus	5
— —	Western Culture elective	4
WINTER TERM		
ENGR-212	Dynamics	4
MTH-253	Calculus III	5
PH-212	General Physics with Calculus	5
SPRING TERM		
ENGR-201	Electrical Fundamentals	4
ENGR-213	Strength of Materials	4
PH-213	General Physics with Calculus	5
<i>Credits required for degree</i>		97

WESTERN CULTURE ELECTIVE

ART-204, 205, 206
 ENG-107, 108, 109, 201, 202, 204, 205, 250, 251, 253, 254, 255
 GEO-208
 HST-101, 102, 103, 132, 201, 202, 203
 PHL-102
 R-204
 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 ELECTIVE

ANT-231, 232
 ENG-213, 252
 R-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 204, 205, 206

DMC-194

ENG-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 204, 205, 213, 241, 250, 251, 252, 253, 254, 255, 260, 270

MUS-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203

SOC-225

BIOLOGICAL SCIENCE ELECTIVE

BI-101, 102, 103, 175, 176, 177, 204, 211, 212, 213, 234

ESR-171, 172, 173

Z-201, 202, 203

Emphasis in Construction Engineering Management

PROGRAM CODE: AS.OSUCONENRMGT

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4
WINTER TERM		
BA-226	Business Law I	4
CDT-103	Computer-Aided Drafting I	3
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
SPRING TERM		
EC-201	Principles of Economics: MICRO	4
EC-202	Principles of Economics: MACRO	4
— —	Biological Science elective	4-5
— —	Literature and the Arts elective	3-4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ENGR-211	Statics	4
HPE-295	Health & Fitness for Life	3
PH-211	General Physics with Calculus	5
WINTER TERM		
BA-215	Fundamentals of Accounting (online through OSU)	4
PH-212	General Physics with Calculus	5
PHL-102	Ethics	4
— —	Cultural Diversity elective	4
SPRING TERM		
COMM-111	Public Speaking	4
ENGR-213	Strength of Materials	4
ENGR-390	Engineering Economy (online through OSU)	3
WR-227	Technical Report Writing	4
<i>Credits required for degree</i>		91-93

CULTURAL DIVERSITY ELECTIVE

ANT-231, 232

ENG-213, 252

R-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 204, 205, 206

DMC-194

ENG-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 204, 205, 213, 241, 250, 251, 252, 253, 254, 255, 260, 270

MUS-105, 205, 206

BIOLOGICAL SCIENCE ELECTIVE

BI-101, 102, 103, 175, 176, 177, 204, 211, 212, 213, 234

ESR-171, 172, 173

Z-201, 202, 203

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 ELECTIVE

HST-201, 202, 203

SOC-225

Emphasis in Ecological Engineering

PROGRAM CODE: AS.OSUECOLENGR

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
COMM-111	Public Speaking	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4
WINTER TERM		
CH-221	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
— —	Literature and the Arts elective	3-4
SPRING TERM		
CH-222	General Chemistry	5
MTH-254	Vector Calculus	5
WR-227	Technical Report Writing	4
SUMMER TERM		
CH-223	General Chemistry	5
MTH-256	Differential Equations	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
BI-211	General Biology for Science Majors (Cellular Biology)	5
ENGR-211	Statics	4
PH-211	General Physics with Calculus	5
WINTER TERM		
BI-212	General Biology for Science Majors (Animal Biology)	5
MTH-253	Calculus III	5
PH-212	General Physics with Calculus	5
SPRING TERM		
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
ENGR-213	Strength of Materials	4
PH-213	General Physics with Calculus	5
— —	Western Culture elective	4

Credits required for degree

102-103

Continued

Engineering continued...

WESTERN CULTURE ELECTIVE

ART-204, 205, 206
ENG-107, 108, 109, 201, 202, 204, 205, 250, 251, 253, 254, 255
GEO-208
HST-101, 102, 103, 201, 202, 203
PHL-102
R-204

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 ELECTIVE

ANT-231, 232
ENG-213, 252
GEO-121
R-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 204, 205, 206
DMC-194
ENG-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 204, 205, 213, 241, 250, 251, 252, 253, 254, 255, 260, 270
MUS-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203
SOC-225

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Electrical Engineering

PROGRAM CODE: AS.OSUELCOMPENGR

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
CS-161	Computer Science I	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4
WINTER TERM		
CH-221	General Chemistry	5
CS-162	Computer Science II	4
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
SPRING TERM		
CS-260	Data Structures	4
MTH-253	Calculus III	5
WR-227	Technical Report Writing	4
— —	Social Processes elective	4
SUMMER TERM		
COMM-111	Public Speaking	4
MTH-256	Differential Equations	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ENGR-221	Electrical Circuit Analysis I	4
MTH-254	Vector Calculus	5
PH-211	General Physics with Calculus	5
WINTER TERM		
ENGR-171	Digital Logic	4
MTH-231	Elements of Discrete Mathematics	4
ENGR-222	Electrical Circuit Analysis II	4
PH-212	General Physics with Calculus	5
SPRING TERM		
ENGR-223	Electrical Circuit Analysis III	4
PH-213	General Physics with Calculus	5
— —	Western Culture elective	4
<i>Credits required for degree</i>		102

SOCIAL PROCESSES ELECTIVE

ANT-103
EC-201, 202
HST-101, 102, 103
PS-201, 204, 205, 225
PSY-110, 200, 205, 219, 231
SOC-204, 205, 206

WESTERN CULTURE ELECTIVE

ART-204, 205, 206
ENG-107, 108, 109, 201, 202, 204, 205, 250, 251, 253, 254, 255
GEO-208
HST-101, 102, 103, 132, 201, 202, 203
PHL-102
R-204

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 ELECTIVE

ANT-231, 232
ENG-213, 252
R-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 204, 205, 206
DMC-194
ENG-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 204, 205, 213, 250, 251, 252, 253, 254, 255, 260
MUS-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203
SOC-225

BIOLOGICAL SCIENCE ELECTIVE

BI-101, 102, 103, 175, 176, 177, 204, 211, 212, 213, 234
ESR-171, 172, 173
Z-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Energy Systems Engineering

PROGRAM CODE: AS.OSUENERGYSYS

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4

WINTER TERM

CH-222	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5

SPRING TERM

COMM-111	Public Speaking	4
EC-201	Principles of Economics: MICRO	4
MTH-254	Vector Calculus	5
WR-227	Technical Report Writing	4

SUMMER TERM

MTH-256	Differential Equations	4
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PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
BA-211	Financial Accounting I	4
ENGR-211	Statics	4
ENGR-221	Electrical Circuit Analysis I	4
PH-211	General Physics with Calculus	5

WINTER TERM

ENGR-212	Dynamics	4
ENGR-222	Electrical Circuit Analysis II	4
PH-212	General Physics with Calculus	5

SPRING TERM

PH-213	General Physics with Calculus	5
— —	Engineering elective	3-4
— —	Literature and the Arts elective	3-4
— —	Western Culture elective	4

Credits required for degree 96-98

ENGINEERING ELECTIVE

ENGR-115, 213, 223

WESTERN CULTURE ELECTIVE

ART-204, 205, 206

ENG-107, 108, 109, 201, 202, 204, 205, 250, 251, 253, 254, 255

GEO-208

HST-101, 102, 103, 132, 201, 202, 203

PHL-102

R-204

LITERATURE AND THE ARTS ELECTIVE

ART-101, 204, 205, 206

DMC-194

ENG-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 204, 205, 213, 241, 250, 251, 252, 253, 254, 255, 260, 270

MUS-105, 205, 206

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 ELECTIVE

ANT-231, 232

ENG-213, 252

R-101, 102, 103, 210

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203

SOC-225

BIOLOGICAL SCIENCE ELECTIVE

BI-101, 102, 103, 175, 176, 177, 204, 211, 212, 213, 234

ESR-171, 172, 173

Z-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Environmental Engineering

PROGRAM CODE: AS.OSUENVIRENGR

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4
— —	Social Processes elective	4

WINTER TERM

CH-221	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
WR-227	Technical Report Writing	4

SPRING TERM

CH-222	General Chemistry	5
ENGR-115	Engineering Graphics	3
MTH-254	Vector Calculus	5
— —	Western Culture elective	4

SUMMER TERM

CH-223	General Chemistry	5
COMM-111	Public Speaking	4
MTH-256	Differential Equations	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
CH-241	Organic Chemistry I	5
ENGR-211	Statics	4
PH-211	General Physics with Calculus	5

WINTER TERM

CH-242	Organic Chemistry II	5
ENGR-212	Dynamics	4
PH-212	General Physics with Calculus	5

SPRING TERM

CH-243	Organic Chemistry III	5
ENGR-213	Strength of Materials	4
MTH-253	Calculus III	5
PH-213	General Physics with Calculus	5

Credits required for degree 110

*Engineering continued...***SOCIAL PROCESSES ELECTIVE**

ANT-103
EC-201, 202
HST-101,102,103
PS-201, 204, 205, 225
PSY-110, 200, 205, 219, 231
SOC-204, 205, 206

WESTERN CULTURE ELECTIVE

ART-204, 205, 206
ENG-107, 108, 109, 201, 202, 204, 205, 250, 251, 253, 254, 255
GEO-208
HST-101, 102, 103, 132, 201, 202, 203
PHL-102
R-204

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 ELECTIVE

ANT-231, 232
ENG-213, 252
R-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 204, 205, 206
DMC-194
ENG-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 204, 205, 213, 250, 251, 252, 253, 254, 255, 260
MUS-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203
SOC-225

BIOLOGICAL SCIENCE ELECTIVE

BI-101, 102, 103, 175, 176, 177, 204, 211, 212, 213, 234
ESR-171, 172, 173
Z-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Industrial/Manufacturing Engineering

PROGRAM CODE: AS.OSUINDMFGENG

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
COMM-111	Public Speaking	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4
WINTER TERM		
CH-221	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5

SPRING TERM

CH-222	General Chemistry	5
ENGR-115	Engineering Graphics	3
MTH-254	Vector Calculus	5
WR-227	Technical Report Writing	4

SUMMER TERM

MTH-256	Differential Equations	4
— —	Social Processes elective	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ENGR-211	Statics	4
PH-211	General Physics with Calculus	5
— —	Western Culture elective	4

WINTER TERM

ENGR-212	Dynamics	4
PH-212	General Physics with Calculus	5
— —	Literature and the Arts elective	3-4

SPRING TERM

ENGR-201	Electrical Fundamentals	4
ENGR-213	Strength of Materials	4
PH-213	General Physics with Calculus	5

Credits required for degree 92-93

SOCIAL PROCESSES ELECTIVE

ANT-103
EC-201, 202
HST-101, 102, 103
PS-201, 204, 205, 225
PSY-110, 200, 205, 219, 231
SOC-204, 205, 206

WESTERN CULTURE ELECTIVE

ART-204, 205, 206
ENG-107, 108, 109, 201, 202, 204, 205, 250, 251, 253, 254, 255
GEO-208
HST-101, 102, 103, 132, 201, 202, 203
PHL-102
R-204

LITERATURE AND THE ARTS ELECTIVE

ART-101, 204, 205, 206
DMC-194
ENG-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 204, 205, 213, 241, 250, 251, 252, 253, 254, 255, 260, 270
MUS-105, 205, 206

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 ELECTIVE

ANT-231, 232
ENG-213, 252
R-101, 102, 103, 210

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203
SOC-225

BIOLOGICAL SCIENCE ELECTIVE

BI-101, 102, 103, 175, 176, 177, 204, 211, 212, 213, 234
 ESR-171, 172, 173
 Z-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Mechanical Engineering

PROGRAM CODE: AS.OSUSMECHENGR

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
COMM-111	Public Speaking	4
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4
WINTER TERM		
CH-221	General Chemistry	5
EC-201	Principles of Economics: MICRO	
or EC-202	Principles of Economics: MACRO	4
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
SPRING TERM		
CH-222	General Chemistry	5
ENGR-115	Engineering Graphics	3
MTH-254	Vector Calculus	5
WR-227	Technical Report Writing	4
SUMMER TERM		
MTH-256	Differential Equations	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ENGR-211	Statics	4
ENGR-221	Electrical Circuit Analysis I	4
PH-211	General Physics with Calculus	5
— —	Western Culture elective	4
WINTER TERM		
ENGR-212	Dynamics	4
ENGR-222	Electrical Circuit Analysis II	4
PH-212	General Physics with Calculus	5
SPRING TERM		
ENGR-213	Strength of Materials	4
PH-213	General Physics with Calculus	5
— —	Literature and the Arts elective	3-4
<i>Credits required for degree</i>		96-97

WESTERN CULTURE ELECTIVE

ART-204, 205, 206
 ENG-107, 108, 109, 201, 202, 204, 205, 250, 251, 253, 254, 255
 GEO-208
 HST-101, 102, 103, 132, 201, 202, 203
 PHL-102
 R-204

LITERATURE AND THE ARTS ELECTIVE

ART-101, 204, 205, 206
 DMC-194
 ENG-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 204, 205, 213, 241, 250, 251, 252, 253, 254, 255, 260, 270
 MUS-105, 205, 206

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 ELECTIVE

ANT-231, 232
 ENG-213, 252
 R-101, 102, 103, 210

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203
 SOC-225

BIOLOGICAL SCIENCE ELECTIVE

BI-101, 102, 103, 175, 176, 177, 204, 211, 212, 213, 234
 ESR-171, 172, 173
 Z-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE-295

Associate of Science with an emphasis in Engineering with Oregon Institute of Technology (Oregon Tech)**Emphasis in Electrical Engineering**

PROGRAM CODE: AS.OITELECENGR

PROGRAM 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
WINTER TERM		
CH-222	General Chemistry	5
ENGR-112	Engineering Programming	3
ENGR-171	Digital Logic	4
MTH-252	Calculus II	5
SPRING TERM		
COMM-111	Public Speaking	4
ENGR-271	Digital Systems	4
MTH-261	Linear Algebra	4
WR-121	English Composition	4
SUMMER TERM		
WR-227	Technical Report Writing	4
— —	Social Science elective	3-4

Engineering continued...

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ENGR-221	Electrical Circuit Analysis I	4
MTH-254	Vector Calculus	5
PH-211	General Physics with Calculus	5
— —	Humanities or Social Science elective	3-4
WINTER TERM		
ENGR-222	Electrical Circuit Analysis II	4
MTH-256	Differential Equations	4
PH-212	General Physics with Calculus	5
WR-122	English Composition	4
SPRING TERM		
ENGR-223	Electrical Circuit Analysis III	4
MTH-253	Calculus III	5
PH-213	General Physics with Calculus	5
<i>Credits required for degree</i>		105-107

SOCIAL SCIENCE ELECTIVES

Choose courses from the following subjects:

ANT, EC, GEO, HST, PS, PSY, SOC, SSC, WS

HUMANITIES ELECTIVES

Choose courses from the following subjects:

ART, ASL (200-level), ENG, FR (200-level), GER (200-level), HUM, MUS, PHL, R, SPN (200-level), TA

Emphasis in Mechanical Engineering

PROGRAM CODE: AS.OITMECHENGR

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WR-121	English Composition	4
WINTER TERM		
CH-222	General Chemistry	5
ENGR-231	Properties of Materials	4
MTH-252	Calculus II	5
WR-122	English Composition	4
SPRING TERM		
COMM-111	Public Speaking	4
ENGR-112	Engineering Programming	3
MTH-254	Vector Calculus	5
WR-227	Technical Report Writing	4
SUMMER TERM		
MTH-256	Differential Equations	4
— —	Social Science elective	3-4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ENGR-211	Statics	4
MTH-261	Linear Algebra	4
PH-211	General Physics with Calculus	5

WINTER TERM

CDT-103	Computer-Aided Drafting I	3
ENGR-212	Dynamics	4
PH-212	General Physics with Calculus	5
— —	Humanities elective	3-4

SPRING TERM

EC-201	Principles of Economics: MICRO	
or EC-202	Principles of Economics: MACRO	4
ENGR-201	Electrical Fundamentals	4
ENGR-213	Strength of Materials	4
PH-213	General Physics with Calculus	5
<i>Credits required for degree</i>		103-105

SOCIAL SCIENCE ELECTIVES

Choose courses from the following subjects:

ANT, EC, GEO, HST, PS, PSY, SOC, SSC, WS

HUMANITIES ELECTIVES

Choose courses from the following subjects:

ART, ASL (200-level), ENG, FR (200-level), GER (200-level), HUM, MUS, PHL, R, SPN (200-level), TA

Emphasis in Renewable Energy Engineering

PROGRAM CODE: AS.OITRNWNRGENGR

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
MTH-251	Calculus I	5
RET-200	Renewable Energy Systems	
or ENGR-111	Introduction to Engineering	3-4
WR-121	English Composition	4
WINTER TERM		
CH-222	General Chemistry	5
COMM-111	Public Speaking	4
MTH-252	Calculus II	5
— —	Humanities elective	3-4
SPRING TERM		
EC-201	Principles of Economics: MICRO	
or EC-202	Principles of Economics: MACRO	4
MTH-261	Linear Algebra	4
WR-227	Technical Report Writing	4
— —	Humanities elective	3-4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ENGR-211	Statics	4
ENGR-221	Electrical Circuit Analysis I	4
MTH-254	Vector Calculus	5
PH-211	General Physics with Calculus	5
WINTER TERM		
ENGR-222	Electrical Circuit Analysis II	4
MTH-256	Differential Equations	4
PH-212	General Physics with Calculus	5
WR-122	English Composition	4

SPRING TERM

ENGR-223	Electrical Circuit Analysis III	4
PH-213	General Physics with Calculus	5
— —	Social Science elective	3-4
— —	Social Science elective	3-4

Credits required for degree 99-104

SOCIAL SCIENCE ELECTIVES

Choose courses from the following subjects:

ANT, EC, GEO, HST, PS, PSY, SOC, SSC, WS

HUMANITIES ELECTIVES

Choose courses from the following subjects:

ART, ASL (200-level), **ENG, FR** (200-level), **GER** (200-level), **HUM, MUS, PHL, R, SPN** (200-level), **TA**

Associate of Science with an emphasis in Engineering with George Fox University

PROGRAM CODE: AS.GFENGINEER

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
ENGR-111	Introduction to Engineering	3
MTH-251	Calculus I	5
WINTER TERM		
CH-222	General Chemistry	5
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
— —	Engineering elective	4
SPRING TERM		
ENGR-115	Engineering Graphics	3
MTH-243	Statistics I	4
MTH-253	Calculus III	5
WR-121	English Composition	4
SUMMER TERM		
EC-201	Principles of Economics: MICRO	
or EC-202	Principles of Economics: MACRO	4
WR-122	English Composition	4

PROGRAMMING REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
MTH-254	Vector Calculus	5
PH-211	General Physics with Calculus	5
-----	Engineering elective	8
WINTER TERM		
COMM-111	Public Speaking	4
MTH-256	Differential Equations	4
PH-212	General Physics with Calculus	5
— —	Engineering elective	3-4
SPRING TERM		
MTH-261	Linear Algebra	4
PH-213	General Physics with Calculus	5
— —	History elective	4
— —	Intercultural Experience elective	4

Credits required for degree 105-106

COMPLETE ONE SET OF ENGINEERING ELECTIVES FOR THE AS DEGREE.**ELECTRICAL & COMPUTER ENGINEERING MAJORS:**

COURSE		CREDITS
ENGR-171	Digital Logic	4
ENGR-221	Electrical Circuit Analysis I	4
ENGR-222	Electrical Circuit Analysis II	4
ENGR-271	Digital Systems	4

BIOMEDICAL, CIVIL, AND MECHANICAL ENGINEERING MAJORS:

COURSE		CREDITS
ENGR-211	Statics	4
ENGR-212	Dynamics	4
ENGR-231	Properties of Materials	4
HPE-295	Health & Fitness for Life	3

INTERCULTURAL EXPERIENCE ELECTIVE:

Choose one of the following:

FR/GER/SPN-101, 102, 103, 201, 202, 203

ANT-103

COMM-140

ENG-107, 108, 109

R-210

HISTORY ELECTIVE

Choose one of the following:

HST-101, 102, 103, 201, 202, 203

PS-205



English

The Associate of Science degree with an emphasis in English is for students interested in transferring a bachelor's degree to Oregon State University, Portland State University, or University of Oregon with an emphasis in Literature, Creative Writing, and Publishing.

Reading and writing skills have never been as central to our lives as they are today. Within the course of one day or one hour, we are bombarded with information on our televisions, computer screens, and telephones. We write socially, creatively, professionally, and/or academically, and we do so on a phone, a tablet, a desktop, or a physical piece of paper. An AS degree in English offers an array of opportunities. We offer four focus areas, including studies in English Literature, Creative Writing, Comics, and Publishing to prepare students to navigate the world of images and words.

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 \$40,000, and often rising much higher in the ten years after graduating.

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 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.

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.

Creative writing and publishing students will additionally be able to:

- 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.

For information contact Amanda Coffey, 503-594-3257 or amandac@clackamas.edu

Associate of Science with an emphasis in English with Oregon State University

PROGRAM CODE: AS.OSUENGLISH

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
ASL-101	American Sign Language I	
or FR-101	First-Year French I	
or SPN-101	First-Year Spanish I	4
HPE-295	Health & Fitness for Life	3
WR-121	English Composition	4
— —	Biological Science elective	4
WINTER TERM		
ASL-102	American Sign Language	
or FR-102	First-Year French II	
or SPN-102	First-Year Spanish II	4
MTH-105	Math in Society	
or MTH-111	College Algebra	
or MTH-112	Trigonometry and Pre-Calculus	
or MTH-251	Calculus I	4-5
or MTH-252	Calculus II	4-5
WR-122	English Composition	4
— —	200-level English elective	4
SPRING TERM		
ART-206	History of Art/Enlightenment Through Contemporary	
or MUS-105	Music Appreciation	3-4
ASL-103	American Sign Language	
or FR-103	First-Year French III	
or SPN-103	First-Year Spanish III	4
— —	200-level English elective	4
— —	Physical Science elective	4-5

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ASL-201	Second-Year American Sign Language I	4
or FR-201	Second-Year French I	
or SPN-201	Second-Year Spanish I	
— —	200-Level English sequence	
or	200-Level English elective	4
— —	Biological Science	4-5
or	Physical Science	
— —	Speech elective	4

WINTER TERM

ASL-202	Second-Year American Sign Language II	4
or FR-202	Second-Year French II	
or SPN-202	Second-Year Spanish II	
— —	200-Level English sequence	
— —	Cultural Diversity elective	4
— —	Social Processes/Institutions elective	4

SPRING TERM

ASL-203	Second-Year American Sign Language III	4
or FR-203	Second-Year French III	
or SPN-203	Second-Year Spanish III	
HST-203	History of the United States	
or SOC-225	Social Problems	4
— —	200-Level sequence	4
or	200-Level English elective	
— —	Western Culture elective	

Credits required for degree 94-98

Note: Prerequisites for second year world languages: Either two years of high school world languages, OR, one year of college 100-level courses **ASL**, **FR**, or **SPN**-101, 102, 103.

BIOLOGICAL SCIENCE ELECTIVES

BI-102, 103, 204, 211, 212, 213, 234

200-LEVEL ENGLISH ELECTIVES

ENG-201, 202, 204, 205, 253, 254

PHYSICAL SCIENCE ELECTIVES

CH-221, 222, 223

G-101, 102, 103, 201, 202, 203

GS-107

PH-121, 122, 123, 201, 202, 203, 211, 212, 213

ENGLISH SEQUENCE OPTIONS

ENG-204 and **ENG**-205 or **ENG**-253 and **ENG**-254

SPEECH ELECTIVES

COMM-111, 112, 218

WR-241, 242, 243

CULTURAL DIVERSITY ELECTIVES

R-101, 102, 103, 210

SOCIAL PROCESSES/ INSTITUTIONS ELECTIVES

ANT-103

EC-201, 202

HST-101, 102, 103

PS-201, 204, 205

PSY-200, 205

SOC-204, 205

WESTERN CULTURE ELECTIVES

ART-204, 205, 206

GEO-208

HST-101, 102, 103, 201, 202, 203

PHL-102

PS-203

Associate of Science with an emphasis in English with Portland State University

PROGRAM CODE: AS.PSUENGLISH

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
ASL-101	American Sign Language I	4
or FR-101	First-Year French I	
or SPN-101	First-Year Spanish I	
ENG-201	Shakespeare	
or ENG-204	British Literature: Ancient to Enlightenment	4
MTH-105	Math in Society	4-5
or MTH-111	College Algebra	
or MTH-112	Trigonometry and Pre-Calculus	
or MTH-251	Calculus I	
or MTH-252	Calculus II	4-5
WR-121	English Composition	4
WINTER TERM		
ASL-102	American Sign Language	4
or FR-102	First-Year French II	
or SPN-102	First-Year Spanish II	
ENG-202	Shakespeare	
or ENG-205	British Literature: Romantic to Contemporary	4
or ENG-253	American Literature: Pre-Columbian to Civil War	
WR-122	English Composition	4
— —	Social Science elective	4
SPRING TERM		
ASL-103	American Sign Language	4
or FR-103	First-Year French III	
or SPN-103	First-Year Spanish III	
ENG-270	Introduction to Literary Criticism	
WR-222	English Composition	4
or WR-140	Introduction to Writing Creatively	
— —	Science elective	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ASL-201	Second-Year American Sign Language I	4
or FR-201	Second-Year French I	
or SPN-201	Second-Year Spanish I	
WR-248	Bookmaking: Design and Layout	
WR —	200-level Creative Writing Course	4
— —	Social Science elective	4
WINTER TERM		
ASL-202	Second-Year American Sign Language II	4
or FR-202	Second-Year French II	
or SPN-202	Second-Year Spanish II	
WR-246	Editing & Publishing	
WR-265	Digital Storytelling	4
WR-244	Advanced Fiction Writing	4
or WR-245	Advanced Poetry Writing	
or WR-263	Advanced Screenwriting	

Continued

English continued...

SPRING TERM

ASL-203	Second-Year American Sign Language III	
or FR-203	Second-Year French III	
or SPN-203	Second-Year Spanish III	4
ENG-297	A.S. Degree Portfolio	1
— —	English program elective	8
<i>Credits required for degree</i>		93-94

Note: Prerequisites for second year world languages: Either two years of high school world languages, OR, one year of college 100-level courses **ASL, FR,** or **SPN**-101, 102, 103.

SOCIAL SCIENCE ELECTIVES

ANT-102
EC-201, 202
HST-101, 102, 103, 201, 202, 203
PS-200, 203, 204, 205
PSY-101, 205
SOC-204
WS-101

SCIENCE ELECTIVES

BI-101, 102, 103, 112, 234
CH-104, 105, 106, 150, 221, 222, 223
ESR-171, 172, 173
G-201, 202, 203
PH-121, 122, 123, 201, 202, 203, 211, 212, 213

ENGLISH PROGRAM ELECTIVES

4 credits from the following list if not used already in AS to satisfy the degree requirements:

ENG-104, 105, 106, 107, 108, 109, 116, 121, 130, 194, 195, 213, 218, 225, 226, 230, 250, 251, 252, 255, 260, 261, 266, 295
WR-270

200-LEVEL CREATIVE WRITING ELECTIVES

4 credits from the following list if not used already in AS to satisfy the degree requirements:

WR-240, 241, 243, 262

Associate of Science with an emphasis in English with University of Oregon

PROGRAM CODE: AS.UOENGLISH

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
ASL-101	American Sign Language I	
or FR-101	First-Year French I	
or SPN-101	First-Year Spanish I	4
MTH-105	Math in Society	
or MTH-111	College Algebra	
or MTH-112	Trigonometry and Pre-Calculus	
or MTH-251	Calculus I	4-5
or MTH-252	Calculus II	4
WR-121	English Composition	4
WR-140	Introduction to Writing Creatively	
or — —	Arts & Letters course	4

WINTER TERM

ASL-102	American Sign Language	
or FR-102	First-Year French II	
or SPN-102	First-Year Spanish II	4
ESR-172	Environmental Science	
or — —	Science course	4-5
PSY-110	Psychology: An Overview	
or — —	Social Science course	3-5
WR-122	English Composition	4

SPRING TERM

ASL-103	American Sign Language	
or FR-103	First-Year French III	
or SPN-103	First-Year Spanish III	4
ESR-173	Environmental Science	
or — —	Science elective course	4-5
ENG-270	Introduction to Literary Criticism	
or — —	Arts & Letters course	4
WR-222	English Composition	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
ASL-201	Second-Year American Sign Language I	
or FR-201	Second-Year French I	
or SPN-201	Second-Year Spanish I	4
ENG-204	British Literature: Ancient to Enlightenment	4
ENG—	Program elective	4
— —	General Elective	4

WINTER TERM

ASL-202	Second-Year American Sign Language II	
or FR-202	Second-Year French II	
or SPN-202	Second-Year Spanish II	4
ENG-205	British Literature: Romantic to Contemporary	
or ENG-253	American Literature: Pre-Columbian to Civil War	4
ENG —	Program elective	4
— —	General elective	4

SPRING TERM

ASL-203	Second-Year American Sign Language III	
or FR-203	Second-Year French III	
or SPN-203	Second-Year Spanish III	4
ENG-254	American Literature: 1865 to Present	4
ENG-297	A.S. Degree Portfolio	1
HST-103	History of Western Civilization	
or — —	Social Science elective	3-5

Credits required for degree 91-98

SOCIAL SCIENCE ELECTIVES

ANT-102, 103, 231, 232
EC-201, 202
GEO-110, 208
HST-101, 102, 103, 131, 132, 136, 137, 138, 201, 202, 203
PS-200, 201, 203, 204, 205
PSY-101, 110, 205, 215, 219, 231
SSC-160, 235, 240
SOC-204, 205, 206, 210, 225
WS-101

OTHER SCIENCE ELECTIVES**ANT-101**

BI-101, 102, 103, 112, 160L, 165CL, 204, 211, 212, 213, 231, 232, 233, 234

CH-104, 105, 106, 112, 150, 221, 222, 223, 241, 242, 243

ESR-171, 172, 173

G-101, 102, 103, 145, 148, 201, 202, 203

PH-121, 122, 123, 201, 202, 203, 211, 212, 213

PSY-200

Z-201, 202, 203

ENGLISH PROGRAM ELECTIVES

ENG-104*, 105*, 106*, 107, 108, 109, 116, 121, 130, 194, 195, 201, 202, 213, 218, 225, 226, 230, 240, 241, 250, 251, 252, 255, 260, 261, 266, 295

*Only one selection from **ENG-104, -105, and -106** will count for credit at UO.

GENERAL ELECTIVE

Any other minimum 4-credit transferable course, except for prefixes **PE** or **HPE**, that is not already part of the degree requirements.

ARTS & LETTERS

Minimum 4 credit course per term

WR-240, 241, 242, 243, 244, 245, 246, 262, 263, 265;

or other Arts and Letters courses as listed in the CCC catalog.

Geology

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.

CAREERS

Career pathways include hydrogeology, geological research, geologic hazards, mineral resources, and a wide range of related fields.

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.

For information contact Sarah Hoover, 503-594-3354 or sarah@clackamas.edu

Associate of Science degree with an emphasis in Geology with Portland State University

PROGRAM CODE: AS.PSUGEOLOGY

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
G-201	General Geology	
& G-201L	General Geology Lab	4
MTH-111	College Algebra	5
WR-121	English Composition	4
WINTER TERM		
G-202	General Geology	
& G-202L	General Geology Lab	4
MTH-112	Trigonometry and Pre-Calculus	5
WR-122	English Composition	4
— —	General electives	3-4
SPRING TERM		
COMM-111	Public Speaking	4
G-203	General Geology	
& G-203L	General Geology Lab	4
MTH-251	Calculus I	5
— —	General elective	3-4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
MTH-252	Calculus II	5
— —	Social Science General Education elective	4
— —	General elective	3
WINTER TERM		
CH-222	General Chemistry	5
MTH-261	Linear Algebra	4
— —	Social Science General Education elective	4
— —	General elective	3
SPRING TERM		
CH-223	General Chemistry	5
COMM-140	Introduction to Intercultural Communication	4
MTH-254	Vector Calculus	5

Credits required for degree 92-94

Courses are not always offered during the terms indicated.

MTH-254 can be taken in fall and **MTH-261** can be taken in spring.

GENERAL ELECTIVES

General electives for this requirement can be any college-level course 100 level or above.

Recommended courses that would complement upper division courses at Portland State University include:

Computer Science (**CS-120, 161, or 162**)

Math (**MTH-253 or 256**)

World Languages (**SPN, FR, GER, ASL**)

Geographic Information Systems (**GIS**)

Geology (**G-145 or 148**)

Time permitting also recommended: **PH-201, 202, 203, 211, 212 or 213.**

SOCIAL SCIENCE ELECTIVES

Electives for this requirement can be any Social Science General Education course as listed on page 52 of this catalog.

Horticulture

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.

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.

For information contact April Chastain, Horticulture Advisor, 503-594-3055 or april.chastain@clackamas.edu

Associate of Science with an emphasis in General Horticulture with Oregon State University

PROGRAM CODE: AS.OSUGENHORT

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
HOR-226*	Plant Identification/Fall	4
WR-121	English Composition	4
— —	Horticulture Production & Management electives	3
WINTER TERM		
CH-222	General Chemistry	5
WR-122	English Composition	
or WR-227	Technical Report Writing	4
— —	Horticulture Production & Management electives	3
— —	Choose one from the following list:	3-4
BA-177	Payroll Accounting (3)	
or BA-223	Principles of Marketing (4)	
or BA-250	Small Business Management (3)	
or BA-251	Supervisory Management (3)	
SPRING TERM		
CH-223	General Chemistry	5
HOR-112	Horticulture Career Exploration	2
HOR-228*	Plant Identification/Spring	4
HPE-295	Health & Fitness for Life	3
— —	Horticulture Production & Management electives	3

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM		CREDITS
BI-211	General Biology for Science Majors (Cellular Biology)	5
SPN-101	First-Year Spanish I	4
— —	Choose one from the following list:	3-4
ART-204	History of Art/Ancient Through Medieval (4)	
or ART-205	History of Art/Romanesque Through Baroque (4)	
or ART-206	History of Art/Enlightenment Through Contemporary (4)	
or ENG-104	Introduction to Literature: Fiction (4)	
or ENG-105	Introduction to Literature: Drama (4)	
or ENG-106	Introduction to Literature: Poetry (4)	
or MUS-105	Music Appreciation (3)	
— —	Choose one from the following list:	4
HST-201	History of the United States (4)	
or HST-202	History of the United States (4)	
or HST-203	History of the United States (4)	
or SOC-225	Social Problems (4)	
WINTER TERM		
BI-212	General Biology for Science Majors (Animal Biology)	5
MTH-112	Trigonometry and Pre-Calculus	5
— —	Choose one from the following list:	4
ANT-231	Native Americans of the Pacific Northwest (4)	
or GEO-110	Cultural & Human Geography (4)	
or R-101	Judaism and Foundations of Religion (4)	
or R-102	Christianity and Islam (4)	
or R-103	Asian Religions (4)	
— —	Choose one from the following list:	4
EC-201	Principles of Economics: MICRO (4)	
or PS-201	American Government and Politics (4)	
or SOC-206	Institutions & Social Change (4)	
SPRING TERM		
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5
COMM-111	Public Speaking	
or COMM-218	Interpersonal Communication	4
HOR-215	Herbaceous Perennials	3
HST-103	History of Western Civilization	
or PHL-102	Ethics	4
<i>Credits required for degree</i>		98-100

*HOR-227 may be substituted for HOR-226 or HOR-228. See Horticulture advisor for other possible substitutions

HORTICULTURE PRODUCTION & MANAGEMENT ELECTIVES

HOR-122, 123, 124, 131, 220, 224, 225, 231, 236, 237, 240, 246

Music

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.

CAREERS

Career pathways include music performance, composition, music education, jazz studies, and a wide range of related fields.

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.

For information contact Lars Campbell, 503-594-3384 or lars.campbell@clackamas.edu

Associate of Science with an emphasis in Music with Portland State University

PROGRAM CODE: AS.PSUMUSIC

PROGRAM REQUIREMENTS – FIRST YEAR

FALL TERM	CREDITS
MUP-102 Wind Ensemble or MUP-105 Jazz Ensemble or MUP-122 Chamber Choir or MUP-141 College Orchestra	1-2
*MUP-171-191 Individual Lessons or MUP-171-191J Individual Lessons/Jazz	2
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-121 English Composition	4

WINTER TERM

MUP-102 Wind Ensemble or MUP-105 Jazz Ensemble or MUP-122 Chamber Choir or MUP-141 College Orchestra	1-2
*MUP-171-191 Individual Lessons or MUP-171-191J Individual Lessons/Jazz	2
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
— — Math requirement, choose one from the following:	4-5
MTH-105 Math in Society or MTH-111 College Algebra or MTH-112 Trigonometry and Pre-Calculus or MTH-251 Calculus I or MTH-252 Calculus II	

SPRING TERM

MUP-102 Wind Ensemble or MUP-105 Jazz Ensemble or MUP-122 Chamber Choir or MUP-141 College Orchestra	1-2
*MUP-171-191 Individual Lessons or MUP-171-191J Individual Lessons/Jazz	2
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-122 English Composition	4

PROGRAM REQUIREMENTS – SECOND YEAR

FALL TERM

MUP-202 Wind Ensemble or MUP-205 Jazz Ensemble or MUP-222 Chamber Choir or MUP-241 College Orchestra	1-2
*MUP-271-291 Individual Lessons or MUP-271-291J Individual Lessons/Jazz	2
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 General Education elective	4

WINTER TERM

MUP-202 Wind Ensemble or MUP-205 Jazz Ensemble or MUP-222 Chamber Choir or MUP-241 College Orchestra	1-2
*MUP-271-291 Individual Lessons or MUP-271-291J Individual Lessons/Jazz	2
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 General Education elective	4
— — Science/Math/Computer Science General Education elective	3

Music continued...

SPRING TERM

MUP-202	Wind Ensemble	
or MUP-205	Jazz Ensemble	
or MUP-222	Chamber Choir	
or MUP-241	College Orchestra	1-2
*MUP-271-291	Individual Lessons	
or MUP-271-291J	Individual Lessons/Jazz	2
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 General Education elective	4
— —	Science/Math/Computer Science General Education elective	4

Credits required for degree 100-107

*Lessons must be in same instrument discipline, but may be in different styles.

Note: For students pursuing a jazz degree, MUP-104 or MUP-204 may be substituted for MUS-189.

ARTS & LETTERS, SOCIAL SCIENCE, OR SCIENCE/MATH/COMPUTER SCIENCE GENERAL EDUCATION ELECTIVES

ARTS & LETTERS

ART-101, 115, 116, 117, 131, 204, 205, 206, 225, 226, 227, 250, 251, 252, 253, 254, 255, 281, 282, 283, 284, 285, 286, 291, 292, 293
ASL-201, 202, 203
BA-130
COMM-126, 140, 212, 218, 219, 227
DMC-195
ENG-104, 105, 106, 107, 108, 109, 116, 121, 130, 195, 201, 202, 204, 205, 213, 218, 226, 240, 241, 250, 251, 252, 253, 254, 266, 270
FR-201, 202, 203, 211
HUM-160, 231, 235, 240, 241, 242
J-211
MUS-105, 111, 112, 113, 205, 206, 211, 212, 213
PHL-101, 102, 103, 205, 210
SPN-201, 202, 203
TA-101, 102, 103, 141, 142, 143
WR-241, 242, 243, 244, 245, 248, 262, 263, 265, 270

SOCIAL SCIENCE

ANT-101, 102, 103, 231, 232
CJA-101
EC-200, 201, 202
GEO-100, 110, 130, 208
HST-101, 102, 103, 130, 131, 132, 136, 137, 138, 201, 202, 203
PS-200, 201, 203, 204, 205, 225, 297
PSY-200, 205, 215, 219, 231
SOC-204, 205, 206, 210, 225
SSC-160, 235, 240, 241, 242
WS-101

SCIENCE/MATH/COMPUTER SCIENCE

ASC-175, 176, 177
BI-101, 102, 103, 112, 160, 160L, 165C, 165CL, 165D, 175, 176, 177, 204, 211, 212, 213, 231, 232, 233, 234
CH-104, 105, 106, 112, 114, 221, 222, 223
ESR-171, 172, 173
G-101, 102, 103, 145, 148, 201, 202, 203
GS-104, 105, 106, 107
MTH-211, 212, 213, 243, 244, 252*, 253, 254, 256, 261
PH-121, 122, 123, 201, 202, 203, 211, 212, 213
Z-201, 202, 203

*MTH-252 may be used as an elective requirement in this category if it has not already used for the mathematics requirement in this AS degree.



Student Guide Worksheet 2020-2021

Associate of General Studies Degree (AGS)

Requirements	Credit/Courses Required
Writing - 1 course	WR-121
Communication - 1 course	COMM-100, 111, 112, 126, 140, 212, 218, 219, 227
Mathematics - 1 course	MTH-065, 080, 095, 098, 105 or higher
Health & Physical Education - 1 course	Any 100-level course or above with an HE , HPE or PE prefix or MFG-107
Arts & Letters - 4 credits	ART -101, 115, 116, 117, 131, 204, 205, 206, 232, 233, 250, 251, 252, 253, 254, 255, 257, 281, 282, 283, 284, 285, 286, 291, 292, 293 ASL -201, 202, 203 BA -130 COMM -112, 126, 140, 212, 218, 219, 227 DMC -194, 195 ENG -104, 105, 106, 107, 108, 109, 116, 121, 130, 194, 195, 199, 201, 202, 204, 205, 213, 218, 226, 240, 241, 250, 251, 252, 253, 254, 255, 260, 261, 266, 270, 271, 272, 273, 295, 296 FR -201, 202, 203 GER -201, 202, 203 HUM -160, 235, 237, 240, 241, 242 J -211, 216 MUS -105, 111, 112, 113, 205, 206, 211, 212, 213 PHL -101, 102, 103, 205, 210, 213, 216 R -101, 102, 103, 204, 210, 211, 212 SPN -201, 202, 203 SSC -237 TA -101, 102, 103, 111, 122, 123, 141, 142, 143, 153 WR -241, 242, 243, 244, 245, 247, 248, 262, 263, 265, 270 WS -101
Social Science - 4 credits	ANT -101, 102, 103, 231, 232 CJA -101, 201 EC -200, 201, 202 GEO -100, 110, 130, 208 HE -163, 164 HST -101, 102, 103, 130, 131, 132, 136, 137, 138, 199, 201, 202, 203 HUM -237 PS -200, 201, 203, 204, 205, 225, 297 PSY -200, 205, 215, 219, 231 SOC -204, 205, 206, 210, 225 SSC -160, 235, 237, 240, 241, 242 WS -101
Science/Math/Computer Science - 4 credits	ASC -175, 176, 177 BI -101, 102, 103, 112, 160, 160L, 165C, 165CL, 165D, 175, 176, 177, 204, 211, 212, 213, 231, 232, 233, 234 CH -104, 105, 106, 112, 114, 221, 222, 223 ESR -171, 172, 173 G -101, 102, 103, 145, 148, 201, 202, 203 GS -104, 105, 106, 107 MTH -105, 111, 112, 211, 212, 213, 243, 244, 251, 252, 253, 254, 256, 261 PH -121, 122, 123, 201, 202, 203, 211, 212, 213 Z -201, 202, 203
Other College-level Courses - Any course numbered 100 or above that would bring total credits to 90.	Additional college-level coursework (100 number or above) not already used to satisfy any of the above requirements, to reach total minimum of 90 credits
TOTALS	90 credits

- complete a minimum of 90 credits
- establish cumulative GPA of 2.0 or above
- complete at least 23 credits at CCC
- submit a petition for graduation form to Graduation Services two terms prior to when you expect to graduate.

See page 46 additional information on general requirements for graduation

Student Guide 2020-2021

Oregon Transfer Module (OTM)

Requirements		Courses
		<i>Choose from the following courses to meet requirements.</i>
Foundational Skills	Writing - 2 courses, information literacy will be included in the Writing Requirement.	WR-121 and either 122, or 227
Introduction to Disciplines	Oral Communication - 1 course	COMM-111
	Mathematics - 1 course	MTH-105, 111, 112, 211, 251
	Arts & Letters - 3 courses	ART-101, 115, 116, 117, 131, 204, 205, 206, 232, 233, 250, 251, 252, 253, 254, 255, 257, 281, 282, 283, 284, 285, 286, 291, 292, 293 ASL-201, 202, 203 BA-130 COMM-112, 126, 140, 212, 218, 219, 227 DMC-194, 195 ENG-104, 105, 106, 107, 108, 109, 116, 121, 130, 194, 195, 199, 201, 202, 204, 205, 213, 218, 226, 240, 241, 250, 251, 252, 253, 254, 255, 260, 261, 266, 270, 271, 272, 273, 295, 296 FR-201, 202, 203 GER-201, 202, 203 HUM-160, 235, 237, 240, 241, 242 J-211, 216 MUS-105, 111, 112, 113, 205, 206, 211, 212, 213 PHL-101, 102, 103, 205, 210, 213, 216 R-101, 102, 103, 204, 210, 211, 212 SPN-201, 202, 203 SSC-237 TA-101, 102, 103, 111, 122, 123, 141, 142, 143, 153 WR-241, 242, 243, 244, 245, 247, 248, 262, 263, 265, 270 WS-101
	Social Science - 3 courses	ANT-101, 102, 103, 231, 232 CJA-101, 201 EC-200, 201, 202 GEO-100, 110, 130, 208 HE-163, 164 HST-101, 102, 103, 130, 131, 132, 136, 137, 138, 199, 201, 202, 203 HUM-237 PS-200, 201, 203, 204, 205, 225, 297 PSY-200, 205, 215, 219, 231 SOC-204, 205, 206, 210, 225 SSC-160, 235, 237, 240, 241, 242 WS-101
Science/Math/Computer Science 3 courses, including at least 1 biological or physical science with a lab.	ASC-175, 176, 177 BI-101, 102, 103, 112, 160, 160L, 165C, 165CL, 165D, 175, 176, 177, 204, 211, 212, 213, 231, 232, 233, 234 CH-104, 105, 106, 112, 114, 221, 222, 223 ESR-171, 172, 173 G-101, 102, 103, 145, 148, 201, 202, 203 GS-104, 105, 106, 107 MTH-105, 111, 112, 211, 212, 213, 243, 244, 251, 252, 253, 254, 256, 261 PH-121, 122, 123, 201, 202, 203, 211, 212, 213 Z-201, 202, 203	
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:

1. All courses must be 100 level or higher.
2. All courses must be at least 3 credits.
3. All courses must be passed with a grade of "C" or better.
4. Students must have a minimum cumulative GPA of 2.0 at the time the module is posted.
5. No course may be used to satisfy more than one requirement or distribution area.

Math Course Pathways and Prerequisites

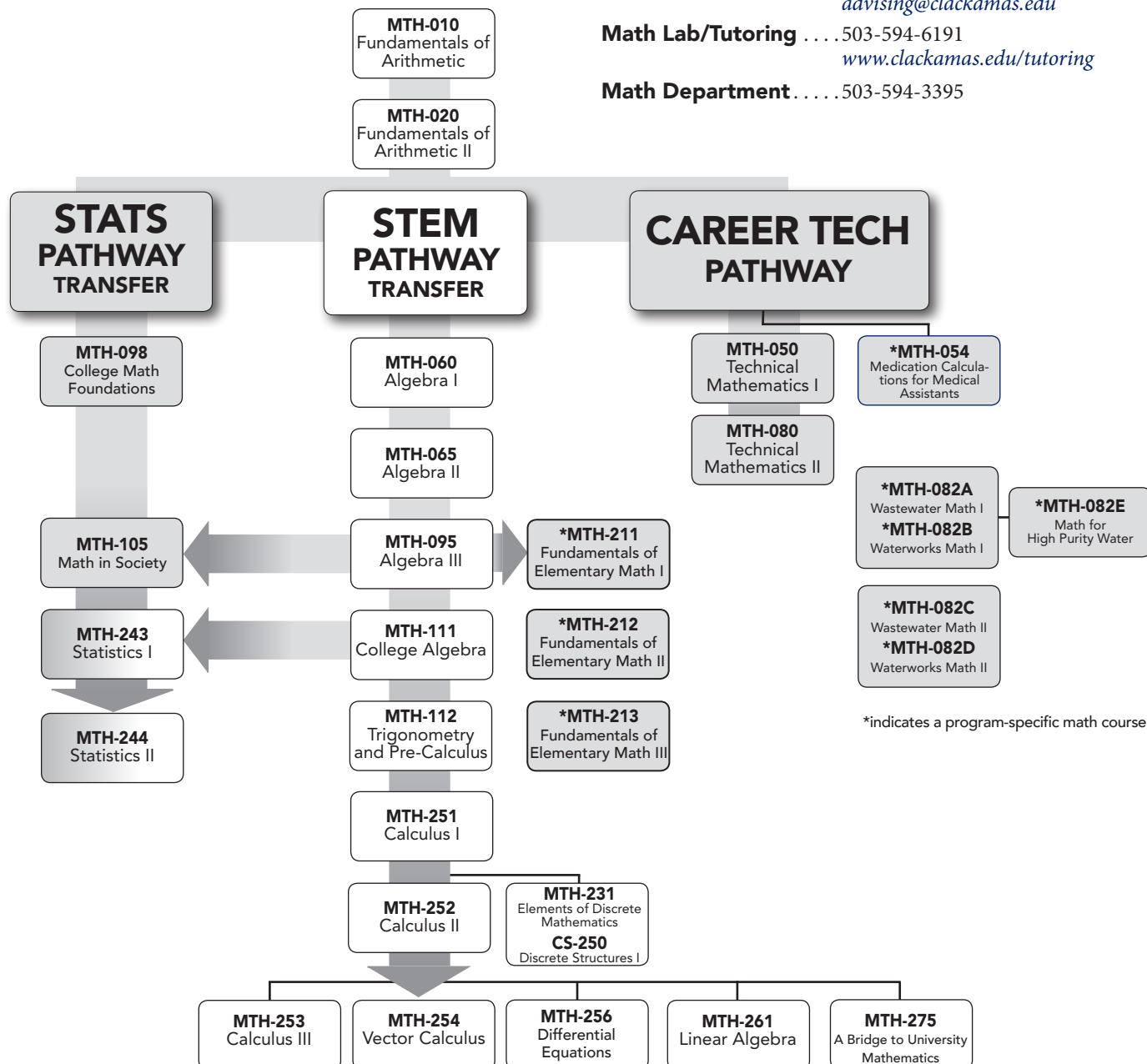
This math prerequisite chart is designed to help you map out the courses you will take to complete your studies or to meet prerequisites for courses you intend to take.

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

To determine the best math course to start with at CCC, identify the right math pathway to meet your academic program or career goal. If you need help choosing or switching your math path, contact our academic advising team at advising@clackamas.edu.

Math Placement Resources:

- PASS Office** 503-594-3283
www.clackamas.edu/pass
- Academic Advising** 503-594-3475
advising@clackamas.edu
- Math Lab/Tutoring** 503-594-6191
www.clackamas.edu/tutoring
- Math Department** 503-594-3395



*indicates a program-specific math course.

Writing Course Pathways and Prerequisites

This reading and writing prerequisites chart is designed to help you map out the courses you will take to complete your studies, or to meet prerequisites for other courses you wish to take.

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 to learn about our placement steps and our PASS Program.

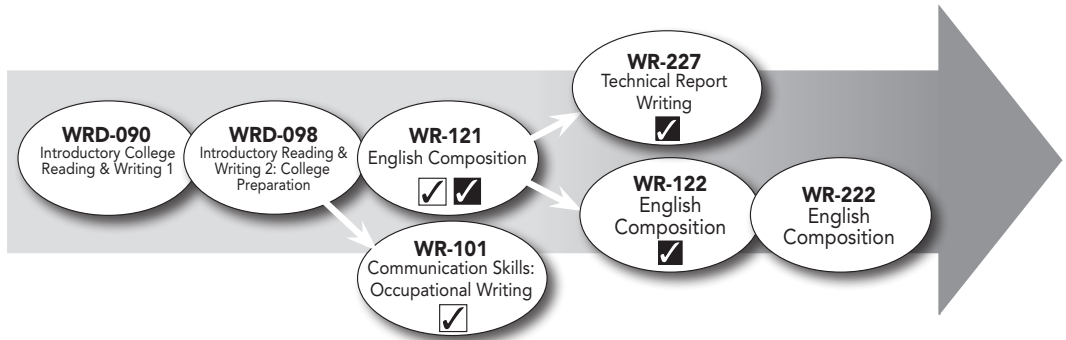
If you are a non-native English speaker interested in improving your reading and writing English skills, please contact our English as a Second Language (ESL) Department for more information.

Writing and Reading Placement Resources:

- PASS Office** 503-594-3283
www.clackamas.edu/pass
- Academic Advising** 503-594-3475
www.clackamas.edu/advising
- English Department** 503-594-3254
- Skills Development/Reading** 503-594-3028
- ESL Department** 503-594-3234
- Writing Center/Tutoring** ... 503-594-6275
www.clackamas.edu/tutoring

WRITING PATHWAY

- ☑ = Meets writing requirements for many career tech programs and certificates
- ☑ = Meets writing requirements for many transfer degrees and certificates



Career Technical Programs

www.clackamas.edu



Education That Works



Approved Related Instruction Courses

Associate of Applied Science Degrees and Certificates

Associate of Applied Science (AAS)

For an Associate of Applied Science degree complete one course from each of the following requirement areas:

- Communication
- Computation
- Human Relations
- Physical Education/Health/Safety/First Aid

Certificate of Completion (CC)

For a Certificate of Completion that is at least one academic year in program length, complete one course from each of the following requirement areas:

- Communication
- Computation
- Human Relations

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.

List of Approved Courses:

The following represents approved courses for meeting related instruction requirement areas.

Communication

WR-101, 121, 122, 222, 227; BA-214

Computation

Computer Science: CS-133VB, 161, 162, 260
Mathematics: BA-104; MTH-050, 054, 065 or above (except 199 and 299)

Human Relations

Business: BA-285
Criminal Justice: CJA-250
Education: ED-258
Human Services: HS-156; HD-161
Oral Communication: COMM-100, 126, 140, 218, 219, 227
Psychology: PSY-101, 215 (for Nursing Program only)

Physical Education/Health/Safety/First Aid

Health/Safety/First Aid: Courses with an HE prefix, HOR-115, FRP-246, or MFG-107
Physical Education: Courses with an HPE or PE prefix



Cooperative Work Experience (CWE)

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:

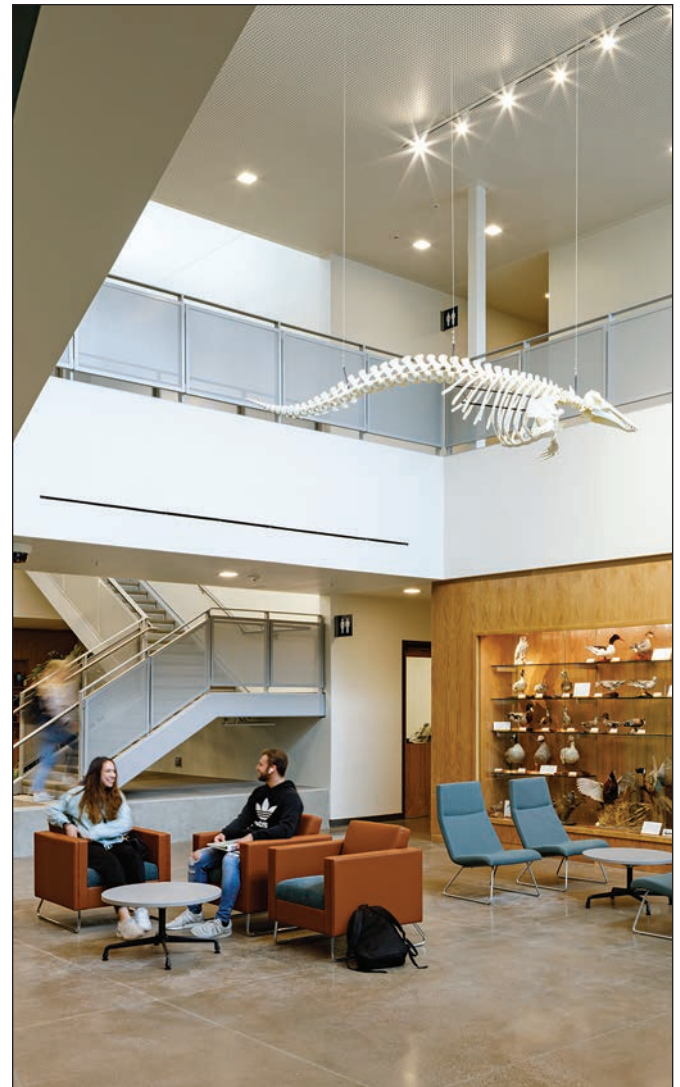
- Declare a program of study and complete all prerequisites for CWE.
- 1-3 terms before the end of your program, meet with the CWE instructor in your department to discuss CWE requirements.
- Determine number of credits to enroll in. You are expected to work approximately 30 hours for each CWE credit.
- 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)
 - 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.

Work/Credit Chart

# 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
2 credits	6-8 hours	60-89 hours	16 hours
1 credit	3-5 hours	30-59 hours	16 hours



Career Technical Programs

Accounting Assistant.....	85	Industrial Maintenance Technology Mechanical Maintenance	126
Accounting Clerk	86	Integrated Marketing & Promotion	133
Administrative Assistant	87	Irrigation Technician	121
Administrative Assistant Training.....	88	Juvenile Corrections.....	106
Administrative Professional.....	86	Landscape Management	127
Alcohol & Drug Counselor.....	124	Landscape Management, Arboriculture Option	128
Apprenticeship	88	Landscape Practices	129
Auto Body/Collision Repair and Refinishing Technology ...	91	Machine Tool Technology	130
Automotive Service Technology.....	92	Management Fundamentals.....	98
Basic Engine Technician	95	Marketing	132
Basic Health Sciences	100	Mastercam	132
Business	96	Medical Assistant.....	133
Business Management	97	Medical Billing and Coding.....	135
Career & Technical Education (CTE) Licensure Prep.....	98	Microelectronics Systems Technology	136
Clinical Laboratory Assistant/Phlebotomy.....	99	Music Performance & Technology	137
CNC Machining Technician.....	132	Music Technology	139
Computer & Network Administration	102	Nursing (RN)	140
Computer Application Specialist	103	Nursing Assistant–Gerontology Specialist.....	118
Computer-Aided Manufacturing.....	101	Occupational Skills Training	144
Criminal Justice.....	104	Organic Farming.....	144
Criminal Justice, Corrections Option.....	105	Plant Health Management.....	121
Dental Assistant.....	107	Professional Truck Driver	145
Digital Media Communications.....	108	Project Management.....	145
Early Childhood Education & Family Studies.....	110	Project Management Leadership & Communication	147
Electronics Engineering Technology.....	112	Project Management Tools & Techniques.....	147
Emergency Medical Technology.....	114	Renewable Energy Technology	148
Employment Skills Training.....	114	Retail Management	149
Energy Systems Maintenance Technician	149	Under Car Technician - Automatic Transmission.....	94
Entry Level Journalist	109	Under Car Technician - Manual Transmission	94
Entry Level Welding Technician.....	155	Under Hood Technician	95
First-Line Supervisor Fundamentals.....	115	Video Production Technician.....	110
Fitness Technology.....	115	Water & Environmental Technology.....	150
Geographic Information Systems (GIS) Technology.....	116	Web Design.....	153
Gerontology.....	117	Web Design & Development	152
Gerontology for Health Care Professionals	118	Welding Technology.....	153
High Purity Water	151	Wilderness Survival & Leadership.....	156
Horticulture	119	Wildland Fire Forestry.....	157
Human Resource Management.....	122	Wildland Fire Management.....	158
Human Resource Management Essentials.....	122	Wildland Fire Science	156
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Accounting Assistant

Associate of Applied Science Degree

PROGRAM CODE: AAS.ACNTGASST

The Accounting Assistant program at Clackamas Community College 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 the Accounting Assistant AAS 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, the Accounting Assistant Associate of Applied Science articulates to a Bachelor of Applied Science in Technology and Management at Oregon Tech.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)

- 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 (1 course- BA-285 Human Relations in Business)

- Engage in ethical communication processes that accomplish goals

Physical Education/Health/Safety/First Aid (1 credit-courses with HE, HPE, or PE prefix)

- 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:

- meet the financial needs and objectives of external stakeholders and/or clients, including preparing and interpreting basic financial reports and statements, and communicating verbally and in writing performance results and recommendations;
- capably use basic business and accounting computerized tools and systems;
- organize, analyze, and record financial events by applying the principles, standards, and practices of accounting in a variety of specialized areas, including financial, managerial, cost, income tax, payroll, governmental and nonprofit, and budgeting;
- comprehend overall business environments and aspects that inform financial situations, including legal and economic events;
- inform internal operational planning, decision-making, and continuous improvement using costing systems, basic budgeting, performance evaluation, and forecasting.

CAREERS

Career opportunities include GSI Accountant I, bookkeeper, payroll clerk, accounts receivable or payable clerk, financial staff accountant, financial analyst, or cost accountant.

OREGON TECH TRANSFER COURSES

The Business Department, 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 Dr. Joan San-Claire, joan.san-claire@clackamas.edu

ACCOUNTING ASSISTANT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-111	General Accounting I	4
WR-121	English Composition	4

WINTER TERM

BA-131	Introduction to Business Computing	4
*BA-156	Business Forecasting	
or EC-201	Principles of Economics: MICRO	3-4
BA-177	Payroll Accounting	3
BA-211	Financial Accounting I	4
— —	PE/Health/Safety/First Aid requirement (see page 82)	1

SPRING TERM

BA-205	Business Communications with Technology	4
BA-212	Financial Accounting II	4
BA-285	Human Relations in Business	4
CS-135S	Microsoft Excel	3

ACCOUNTING ASSISTANT ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-213	Decision Making with Accounting Information	4
BA-218	Personal Finance	4
BA-226	Business Law I	4
WR-227	Technical Report Writing	4

WINTER TERM

BA-216	Cost Accounting	3
BA-240	Introduction to Financial Management	4
BA-256	Income Tax Accounting	4
*— —	Accounting Assistant program electives	4

SPRING TERM

BA-217	Budgeting for Managers	3
BA-228	Computerized Accounting	3
BA-255	Advanced Topics in Accounting	4
*— —	Accounting Assistant program electives	3-4

Credits required for degree 90

ACCOUNTING ASSISTANT PROGRAM ELECTIVES

Any Business Administration (BA) or Business Technology (BT) course not included in the Accounting Assistant program.

* Students who take BA-156 must complete 8 elective credits. Students who take EC-201 must complete 7 elective credits.

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)

- 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 (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:

- meet the financial needs and objectives of external stakeholders and/or clients, including preparing and interpreting basic financial reports and statements, and communicating verbally and in writing performance results and recommendations;
- capably use basic business and accounting computerized tools and systems;
- organize, analyze, and record financial events by applying the principles, standards, and practices of accounting in the areas of financial accounting and payroll;
- comprehend overall business environments and aspects that inform financial situations, including economic events.

CAREERS

Career opportunities include accounts payable or receivable clerk, payroll clerk, and bookkeeper for small and medium-sized service businesses.

For information contact Dr. Joan San-Claire, joan.san-claire@clackamas.edu

ACCOUNTING CLERK CERTIFICATE

FIRST TERM		CREDITS
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-111	General Accounting I	4
WR-121	English Composition	4
SECOND TERM		
*BA-112	General Accounting II	4
BA-131	Introduction to Business Computing	4
BA-156	Business Forecasting	
or EC-201	Principles of Economics: MICRO	3-4
BA-177	Payroll Accounting	3

THIRD TERM

BA-211	Financial Accounting I	4
BA-228	Computerized Accounting	3
BA-285	Human Relations in Business	4
CS-135S	Microsoft Excel	3
— —	Accounting Clerks program electives	3-4

Credits required for certificate

45-48

ACCOUNTING ASSISTANT PROGRAM ELECTIVES

Any Business Administration (BA) or Business Technology (BT) course not included in the Accounting Clerk program.

*BA-212 may be taken instead of BA-112. BA-112 is recommended for students who wish to study small business accounting, whereas BA-212 is corporate-focused.

Courses in this program can be applied to satisfy elective requirements in the Business AAS degree.

Administrative Professional

Associate of Applied Science Degree

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)

- 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 (1 course- BA-285 Human Relations in Business)

- Engage in ethical communication processes that accomplish goals

Physical Education/Health/Safety/First Aid (1 credit-courses with HE, HPE, or PE prefix)

- 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.

CAREERS

Career opportunities may include administrative assistant, office manager, project coordinator, legal assistant and medical secretary.

For information contact Beverly Forney, 503-594-3115 or beverlyf@clackamas.edu.

ADMINISTRATIVE PROFESSIONAL ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-131	Introduction to Business Computing	4
WR-121	English Composition	4
WINTER TERM		
BA-111 or BA-211	General Accounting I Financial Accounting I	4
BT-120	Personal Keyboarding	2
BT-121	Data Entry	1
BT-124	Business Editing I	3
BT-160	Word I	3
SPRING TERM		
BT-125	Business Editing II	3
BT-161	Word II	3
BT-172	Introduction to Microsoft Outlook	2
CS-135S	Microsoft Excel	3
— —	Administrative Professional program electives	3

ADMINISTRATIVE PROFESSIONAL ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
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
WINTER TERM		
BA-206	Management Fundamentals	4
BA-218	Personal Finance	4
BA-224	Human Resource Management	4
— —	PE/Health/Safety/First Aid requirement (see page 82)	1
— —	Administrative Professional program electives	3
SPRING TERM		
BA-228	Computerized Accounting	3
BT-122	Keyboarding Skillbuilding	2
BT-216	Office Procedures	4
BT-271	Advanced Business Projects	4
— —	Administrative Professional program electives	3
<i>Credits required for degree</i>		90

ADMINISTRATIVE PROFESSIONAL PROGRAM ELECTIVES

Any Business Administration (BA) or Business Technology (BT) course not included in the Administrative Professional program.

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)

- 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 (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.

CAREERS

Career opportunities include administrative assistant, legal secretary and medical secretary.

For information contact Beverly Forney, 503-594-3115 or beverlyf@clackamas.edu.

ADMINISTRATIVE ASSISTANT CERTIFICATE

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-121	English Composition	4

Administrative Assistant continued...

WINTER TERM

BA-111	General Accounting I	
or BA-211	Financial Accounting I	4
BT-122	Keyboarding Skillbuilding	2
BT-124	Business Editing I	3
BT-160	Word I	3
— —	Administrative Assistant program electives	3

SPRING TERM

BA-285	Human Relations in Business	4
BT-125	Business Editing II	3
BT-161	Word II	3
BT-172	Introduction to Microsoft Outlook	2
BT-216	Office Procedures	4
	<i>Credits required for certificate</i>	45

ADMINISTRATIVE ASSISTANT PROGRAM ELECTIVES

Any Business Administration (BA) or Business Technology (BT) course not included in the Administrative Assistant program.

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 two-thirds of the required curriculum for the Administrative Assistant (one-year) certificate program.

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.

CAREERS

Continued education and/or experience may lead to positions such as administrative assistant, office manager, or legal or medical office assistants.

For information contact Beverly Forney, 503-594-3115 or beverlyf@clackamas.edu

ADMINISTRATIVE ASSISTANT TRAINING CERTIFICATE

FALL TERM		CREDITS
BA-104	Business Math	3
BT-120	Personal Keyboarding	2
BT-124	Business Editing I	3
WINTER TERM		
BA-111	General Accounting I	4
BT-125	Business Editing II	3
BT-160	Word I	3
SPRING TERM		
BT-122	Keyboarding Skillbuilding	2
BT-161	Word II	3
BT-172	Introduction to Microsoft Outlook	2
BT-216	Office Procedures	4
	<i>Credits required for certificate</i>	29

Apprenticeship

Career Pathway Certificate

Certificate

Associate of Applied Science Degree

PROGRAM CODES: VARIES

Registered Apprenticeship is a method of career and technical education recognized by the Apprenticeship and Training Division of the Oregon Bureau of Labor and Industries (BOLI). It combines on-the-job training and trade-related instruction taken in conjunction with each other. Apprenticeship courses are approved for BOLI-registered apprentices or journey-level workers and are not available to the general public.

CCC's apprenticeship programs offer Statewide Associate of Applied Science degrees, Certificates of Completion and Career Pathway Certificates of Completion for journeymen in the areas of Inside Electrician (IE), Limited Energy (LE), Protective Signaling (LE), Limited Maintenance Electrician (LME), Lineman (UL), Meterman (UM), Wireman (UW), Line Estimator (UE), Painter (PT), and Plumber (PB).

A journeyman has the opportunity to receive a Career Pathway Certificate of Completion, Certificate of Completion and/or Associate of Applied Science degree in their designated field of study upon the completion of their on-the-job training (OJT), related training, journey level card/certificate and the required Related Instruction courses and possible elective courses, depending on the trade.

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.

If you are interested in becoming registered in an Oregon State Apprenticeship program, please contact the Oregon State Bureau of Labor and Industries Apprenticeship and Training Division at 971-673-0761 or www.boli.state.or.us for program and entrance requirements.

For more information on CCC's apprenticeship certificates and degrees, contact the Apprenticeship Coordinator at 503-594-3031 or Apprenticeship Advisor at 503-594-0959, apprenticeship@clackamas.edu.

Construction Trades, General Apprenticeship AAS Degree

*(Limited Entry Program-Journeyman's card
required)*

RELATED INSTRUCTION OUTCOMES

Computation (4-5 credits - See page 82 for course list)

- Use appropriate mathematics to solve problems

Communication (3-4 credits- See page 82 for course list)

- Read actively, think critically, and write purposefully and capably for professional audiences

Human Relations (3-4 credits - See page 82 for course list)

- Engage in ethical communication processes that accomplish goals

**Physical Education/Health/Safety/First Aid (1-3 credits-
courses with HE, HPE, or PE prefix)**

- Use effective life skills to improve and maintain mental and physical wellbeing.

CAREERS

Limited-Entry Program-Journeyman's Card Required. This degree does not guarantee licensure.

6000-8000-HR BOLI-ATD Trades: Asbestos Removal, Carpenter, HVAC/R, Interior/Exterior Finisher, *Painter, Pile Driver, *Plumber, Scaffold Erector, and Sheet Metal.

*Programs offered at Clackamas Community College through partnership with local JATC.

Construction Trades, General Apprenticeship Certificate

*(Limited Entry Program-Journeyman's card
required)*

RELATED INSTRUCTION OUTCOMES

Computation (3-4 credits- See page 82 for course list)

- Use appropriate mathematics to solve problems.

Communication (3-4 credits- See page 82 for course list)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3-4 credits - See page 82 for course list)

- Engage in ethical communication processes that accomplish goals.

CAREERS

Limited-Entry Program-Journeyman's Card Required. This degree does not guarantee licensure.

6000-8000-HR BOLI-ATD Trades Asbestos Removal, Carpenter, HVAC/R, Interior/Exterior Finisher, Painter, Pile Driver, *Plumber, Scaffold Erector, and Sheet Metal.

*Programs offered at Clackamas Community College through partnership with local JATC.

Manual Apprenticeship Trades Career Pathway Certificate

*(Limited Entry Program-Journeyman's card
required)*

CAREERS

Limited-Entry Program-Journeyman's Card Required. This degree does not guarantee licensure.

6000-8000-HR BOLI-ATD Trades Asbestos Removal, Carpenter, HVAC/R, Interior/Exterior Finisher, *Painter, Pile Driver, Plumber, Scaffold Erector, and Sheet Metal.

*Programs offered at Clackamas Community College through partnership with local JATC.

PROGRAM OUTCOMES

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

- complete a minimum of 6000-8000 hours State of Oregon-approved on-the-job training (OJT);
- demonstrate safe working practices including rigging and lock out tag out in accordance with state and federal regulations;
- apply OSHA practices in relationship to the specific trade;
- apply theory as it relates to trade competencies;
- utilize recognized standard building codes guidelines as applicable;
- demonstrate ability to perform welding/brazing applications;
- calculate elementary algebraic equations and formulas;
- apply appropriate formulas to mathematical situations;
- demonstrate the proper care, use and storage of hand and power tools;
- read and interpret building plans and drawings;
- prepare and utilize isometric sketching and detailed drawings per individual trade;
- utilize recognized standard building codes guidelines as applicable;
- complete required related training with a grade C or higher;
- complete a code prep exam with a 75% or higher score per individual trade.

Electrician Apprenticeship Technologies AAS Degree

*(Limited Entry Program-Journeyman's card
required)*

RELATED INSTRUCTION OUTCOMES

Computation (3-4 credits- See page 82 for course list)

- Use appropriate mathematics to solve problems.

Communication (3-4 credits- See page 82 for course list)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3-4 credits - See page 82 for course list)

- Engage in ethical communication processes that accomplish goals.

Apprenticeship continued...

Physical Education/Health/Safety/First Aid (1-3 credits-courses with HE, HPE, or PE prefix)

- Use effective life skills to improve and maintain mental and physical wellbeing.

CAREERS

Limited-Entry Program-Journeyman's Card Required. This degree does not guarantee licensure.

4000 Hour BOLI-ATD Trades: Limited Energy Technician License B, *Limited Maintenance Electrician, Limited Renewable Energy Technician, and Limited Residential Electrician.

6000 Hours BOLI-ATD Trades: *Limited Energy Technician and Sign Maker/Fabricator

8000 Hours BOLI-ATD Trades: *Inside Electrician, Manufacturing Plant Electrician, Sign Assembler/Fabricator, Sign Maker/Erector, Stationary Engineer, *Lineman, *Meterman, and *Wireman

*Programs offered at Clackamas Community College through partnership with local JATC or EIC.

Electrician Apprenticeship Technologies Certificate

(Limited Entry Program-Journeyman's card required)

RELATED INSTRUCTION OUTCOMES

Computation (3 credits- See page 82 for course list)

- Use appropriate mathematics to solve problems.

Communication (3 credits- See page 82 for course list)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits - See page 82 for course list)

- Engage in ethical communication processes that accomplish goals.

CAREERS

Limited-Entry Program-Journeyman's Card Required. This degree does not guarantee licensure.

6000 Hours BOLI-ATD Trades: *Limited Energy Technician and Sign Maker/Fabricator

8000 Hours BOLI-ATD Trades: *Inside Electrician, Manufacturing Plant Electrician, Sign Assembler/Fabricator, Sign Maker/Erector, and Stationary Engineer.

*Programs offered at Clackamas Community College through partnership with local JATC or EIC.

Limited License Electrician Apprenticeship Technologies Career Pathway Certificate *(Limited Entry Program-Journeyman's card required)*

CAREERS

Limited-Entry Program-Journeyman's Card Required. This degree does not guarantee licensure.

4000 Hour BOLI-ATD Trades: *Limited Energy Technician License B, Limited Maintenance Electrician, Limited Renewable Energy Technician, and Limited Residential Electrician.

6000 Hours BOLI-ATD Trades: *Limited Energy Technician License A and Sign Maker/Fabricator

*Programs offered at Clackamas Community College through partnership with local JATC or EIC.

PROGRAM OUTCOMES

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

- complete 4000-8000 hours State of Oregon-approved on-the-job-training. (OJT);
- complete all required related-training with a grade of C or better;
- 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;
- calculate voltage drop;
- solve electrical equations using trade-specific mathematical formulas;
- use test equipment to make electrical measurements;
- appropriate use and care of trade-specific equipment;
- operate PLC's according to trade-specific applications and methodology;
- describe various troubleshooting techniques of trade-specific equipment;
- draw and interpret blueprints and schematics;
- interpret NEC and Oregon Specialty Codes;
- complete & pass timed practice exams;
- demonstrate knowledge of industry terminology;
- use the NEC articles and tables to perform various calculations;
- utilize the Oregon Administrative Rules (OARs) in relation to the NEC and Oregon Specialty Codes (OSC);
- complete the NEC code preparation exams with a 75% and higher.

OREGON TECH TRANSFER COURSES

The programs provide statewide transfer opportunities into either a Bachelor of Science degree in Applied Technology and Management or a Bachelor of Science degree in Operations Management at the Oregon Institute of Technology.

Auto Body/Collision Repair and Refinishing Technology

Associate of Applied Science Degree

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics or MTH-065 Algebra II)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupation Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- Recommended: COMM-100 Basic Speech Communication or PSY-101 Human Relations)

- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (3 credits- courses with HE, HPE, or PE prefix; 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.

CAREERS

Employment opportunities include auto body technician, frame technician, auto body mid-tech, painter's helper, painter, estimator or manager in an independent repair shop, automobile dealership, truck or heavy equipment dealer or service center, or sales of auto body related tools and materials.

For information contact Dustin Bates, 503-594-3973, dustinb@clackamas.edu, or the Automotive and Welding Department, 503-594-3047.

AUTO BODY/COLLISION REPAIR AND REFINISHING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST 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	Technical Mathematics I	
	or MTH-065 Algebra II	4
SECOND TERM		
AB-123	Collision Repair Welding II	2
AB-133	Collision Repair II/Structural	6
ABR-127*	Collision Repair/Refinishing II	6
THIRD TERM		
AB-222	Collision Repair III/Advanced Structural	6
ABR-129	Collision Repair/Refinishing III	6
— —	Human Relations requirement (see page 82) (Recommended: COMM-100 or PSY-101)	3

AUTO BODY/COLLISION REPAIR AND REFINISHING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FOURTH TERM		CREDITS
AB-149	Collision Repair Estimating I	2
AB-224	Collision Repair IV/Advanced Structural	6
ABR-225	Production Shop Techniques	6
— —	PE/Health/Safety/First Aid requirement (see page 82) (Recommended: HE-252 or MFG-107)	3

Auto Body/Collision Repair and Refinishing Technology continued...

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

SIXTH TERM

AB-151	Collision Repair Computerized Estimating - CCC ONE	2
AB-280	Collision Repair/CWE	6
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
<i>Credits required for degree</i>		91-92

* Successful completion of ABR-125 required.

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.

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.

CAREERS

Employment opportunities may include entry level positions as a prepper, masker, painter's helper, body mid-tech, paint or body technician at independent, dealership, or fleet repair facilities in any transportation related field: automotive, trucking, transit, light rail, aircraft, recreational vehicle, industrial or marine.

For information contact Dustin Bates, 503-594-3973, dustinb@clackamas.edu, or the Automotive and Welding Department, 503-594-3047.

AUTO BODY/COLLISION REPAIR REFINISHING CAREER PATHWAY CERTIFICATE

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
SECOND TERM		
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
THIRD TERM		
AB-222	Collision Repair III/Advanced Structural	6
ABR-129	Collision Repair/Refinishing III	6
<i>Credits required for certificate</i>		44

*Successful completion of ABR-125 required.

Automotive Service Technology

Associate of Applied Science Degree

PROGRAM CODE: AAS.AUTOSERTECH

The program focuses on the repair and maintenance of passenger cars and light trucks. Course work includes cooperative work experience working for a local employer. Those who wish to specialize may take advanced mechanical studies courses for more in-depth experience. Students may enter the program any term.

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 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- Recommended: COMM-100 Basic Speech Communication or PSY-101 Human Relations)

- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (3 credits-courses with HE, HPE, or PE prefix; 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:

- practice safety precautions to protect the environment, the student, and the vehicle;
- communicate clearly with team members and supervisors;
- conduct yourself on the job with a high degree of professionalism;
- test and repair basic automotive electrical systems;
- diagnose, repair, and service modern automotive brake systems including, anti-lock systems, traction control systems, and stability control systems;
- diagnose, repair, and service modern suspension systems;
- diagnose, repair, and maintenance of all hybrid systems;
- diagnose and repair symptom based mechanical engine problems, including, cylinder head, valve train; and engine block problems;
- diagnose, repair, and service front and rear wheel drive automatic transmissions;
- diagnose, repair, and service modern fuel and emissions systems;
- diagnose and repair automotive electrical accessory systems;
- diagnose, repair, and service modern heating and air conditioning systems;
- diagnose, repair, and service front and rear wheel drive manual drive train and axle systems.

CAREERS

Career opportunities include: automotive service mechanic/technician, recreational vehicle service technician and truck service mechanic/technician.

OREGON TECH TRANSFER COURSES

The Automotive Department, 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 Dustin Bates, 503-594-3973, dustinb@clackamas.edu, or the Automotive and Welding Department, 503-594-3047.

**AUTOMOTIVE SERVICE TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

FALL TERM		CREDITS
AM-121	General Auto Repair I	3
AM-129	Electrical Systems	7
AM-130	Brake Systems	7
WINTER TERM		
AM-122	General Auto Repair II	3
AM-131	Chassis Systems	7
MTH-050	Technical Mathematics I or MTH-065 Algebra II	4
SPRING TERM		
AM-133	Engine Systems	7
AM-223	Hybrid Service Technology	3
WR-101	Communication Skills: Occupational Writing or WR-121 English Composition	3-4
SUMMER TERM		
AM-280*	Auto Mechanics/CWE	6

**AUTOMOTIVE SERVICE TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FALL TERM		CREDITS
AM-245	Automatic Transmission Systems	7
WLD-102	Introduction to Welding or AB-112 Collision Repair Welding I	2
— —	Human Relations requirement (see page 82) (Recommended: COMM-100 or PSY-101)	3
— —	PE/Health/Safety/First Aid requirement (see page 82) (Recommended: HE-252 or MFG-107)	3
WINTER TERM		
AM-243	Fuel & Emission Control Systems	7
AM-244	Advanced Electrical Systems	7
SPRING TERM		
AM-224	Comfort Systems	4
AM-228	Service Shop Management	4
AM-235	Power Transmission Systems	7
<i>Credits required for degree</i>		94-95

*May be taken after the first year

Note: Alternative course schedule is available. Contact the Automotive and Welding Department, 503-594-3047 for information.



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 Associate of Applied Science (AAS) Automotive Service Technology degree 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. These classes comprise an alternate first year schedule of our AAS degree in Automotive Service Technology. They focus on one skill set necessary for employment within the automotive service industry.

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.

CAREERS

Manual transmission technician, automatic transmission technician, front-end and alignment technician, drive axle specialist, four-wheel drive service technician, apprentice technician, and service writer.

For information contact Dustin Bates, 503-594-3973, dustinb@clackamas.edu, or the Automotive and Welding Department, 503-594-3047.

UNDER CAR TECHNICIAN—AUTOMATIC TRANSMISSION CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
AM-121	General Auto Repair I	3
AM-129	Electrical Systems	7
AM-245	Automatic Transmission Systems	7
WINTER TERM		
AM-122	General Auto Repair II	3
AM-131	Chassis Systems	7
WLD-102 or AB-112	Introduction to Welding Collision Repair Welding I	2

SPRING TERM

AM-228	Service Shop Management	4
AM-235	Power Transmission Systems	7
<i>Credits required for certificate</i>		40

ASE ALIGNMENT

AM-131 aligns with ASE A4 Suspension & Steering
 AM-228 aligns with ASE C1 Automobile Service Consultant
 AM-235 aligns with ASE A3 Manual Drive Train & Axles
 AM-245 aligns with ASE A2 Automatic Transmission/Transaxle

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 Associate of Applied Science (AAS) Automotive Service Technology degree 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. These classes comprise an alternate first-year schedule of our AAS degree in Automotive Service Technology. They focus on one skill set necessary for employment within the Automotive Service industry.

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.

CAREERS

Manual transmission technician, front-end and alignment technician, brake technician, drive axle specialist, four-wheel drive service technician, apprentice technician, and service writer.

For information contact Dustin Bates, 503-594-3973, dustinb@clackamas.edu, or the Automotive and Welding Department, 503-594-3047.

**UNDER CAR TECHNICIAN–MANUAL TRANSMISSION
CAREER PATHWAY CERTIFICATE**

FALL TERM	CREDITS
AM-121 General Auto Repair I	3
AM-129 Electrical Systems	7
AM-130 Brake Systems	7
WINTER TERM	
AM-122 General Auto Repair II	3
AM-131 Chassis Systems	7
WLD-102 Introduction to Welding or AB-112 Collision Repair Welding I	2
SPRING TERM	
AM-228 Service Shop Management	4
AM-235 Power Transmission Systems	7
<i>Credits required for certificate</i>	40

ASE ALIGNMENT

AM-130 aligns with ASE A5 Brakes
 AM-131 aligns with ASE A4 Suspension & Steering
 AM-228 aligns with ASE C1 Automobile Service Consultant
 AM-235 aligns with ASE A3 Manual Drive Train & Axles

Under Hood Technician

Career Pathway Certificate

PROGRAM CODE: CC.UNDERHOODTECH

The Under Hood Technician program combines the initial courses of the Associate of Applied Science (AAS) Automotive Service Technology degree 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 A1, A6, A7, A8, C1, and L1, 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. These classes comprise an alternate first year schedule of our AAS degree in Automotive Service Technology. They focus on one skill set necessary for employment within the Automotive Service industry.

PROGRAM OUTCOMES

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

- practice safety precautions to protect the environment, the students, and the vehicle;
- test and repair basic automotive electrical systems;
- diagnose, repair, and service modern fuel and emissions systems;
- diagnose and repair automotive electrical accessory systems;
- diagnose, repair, and service modern heating and air conditioning systems;
- diagnose and repair symptom based mechanical engine problems, including, cylinder head, valve train; and engine block problems.

CAREERS

Diagnostic tune-up technician, electrical and electronics specialist, air conditioning service technician, apprentice technician, and shop supervisor.

For information contact Dustin Bates, 503-594-3973, dustinb@clackamas.edu, or the Automotive and Welding Department, 503-594-3047.

UNDER HOOD TECHNICIAN CAREER PATHWAY CERTIFICATE

FALL TERM	CREDITS
AM-121 General Auto Repair I	3
AM-129 Electrical Systems	7
WLD-102 Introduction to Welding or AB-112 Collision Repair Welding I	2
WINTER TERM	
AM-122 General Auto Repair II	3
AM-243 Fuel & Emission Control Systems	7
AM-244 Advanced Electrical Systems	7
SPRING TERM	
AM-133 Engine Systems	7
AM-224 Comfort Systems	4
AM-228 Service Shop Management	4
<i>Credits required for certificate</i>	44

ASE ALIGNMENT

AM-129 and AM-244 align with ASE A6 Electrical/Electronic Systems
 AM-133 aligns with ASE A1 Engine Repair
 AM-224 aligns with ASE A7 Heating & Air Conditioning
 AM-228 aligns with ASE C1 Automobile Service Consultant
 AM-243 aligns with ASE A8 Engine Performance, and L1 Advanced Engine Performance Specialist

Basic Engine Technician

Certificate

PROGRAM CODE: CC.BASICENGINE

The Basic Engine Technician program combines Automotive Fundamentals, Small Engine Repair, and General Auto Repair I and II to provide the student with an opportunity to develop essential skills needed to gain entry level employment. This course sequence trains students in the skills necessary to earn industry certifications from the Equipment & Engine Training Council (EETC) in Two Stroke and Four Stroke engine operation as well as small engine electrical systems. Practical aspects of vehicle ownership are also covered so that students can develop good ownership habits such as scheduling periodic maintenance work.

PROGRAM OUTCOMES

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

- develop foundational skills needed for entry level employment;
- earn up to three Industry certificates from EETC;
- develop good automobile ownership habits.

continued

Basic Engine Technician continued...

CAREERS

Graduates of this program may find work in the outdoor power equipment and other small engine mechanics fields. There are over 200 regional jobs in outdoor power equipment and other small engine mechanics. Over the next 10 years the projected regional growth is 14%. Program completers may continue their education in the Automotive Service Technology certificate and degree programs at CCC.

For information contact Dustin Bates, 503-594-3973, dustinb@clackamas.edu.

BASIC ENGINE TECHNICIAN CERTIFICATE: 1ST YEAR

FALL TERM		CREDITS
AM-100	Automotive Fundamentals	3
AM-118	Small Engine Repair	3
WINTER TERM		
AM-121	General Auto Repair I	3
SPRING TERM		
AM-122	General Auto Repair II	3
<i>Credits required for degree</i>		12

Business

Associate of Applied Science Degree

PROGRAM CODE: AAS.BUSINESS

This AAS degree establishes a foundation for a successful management career while enabling students to explore a wide variety of business topics. The program is designed to enhance skills and employability for students who desire a career path in management as well as those who choose the entrepreneurial path. The AAS in Business permits students to complete certificates in Accounting, Business Management, Human Resource Management, Marketing, Project Management or Retail Management and to apply those credits towards completion of the AAS in Business degree. Students may also select courses from a cross section of the aforementioned disciplines.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)

- 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 (1 course- BA-285 Human Relations in Business)

- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 credit-courses with HE, HPE, or PE prefix)

- 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 through the integration of the functional areas of business into a comprehensive plan;
- interpret and present business-related financial information;
- use Microsoft Office applications to create business documents, data files and presentations;
- demonstrate the ability to communicate effectively;
- identify effective human resource practices;
- demonstrate an understanding of key legal concepts as they apply to business, e.g. torts, crimes, ethics, and contracts;
- identify effective interpersonal strategies for individual and group situations.

CAREERS

Career opportunities include managers, coordinators, or supervisors in areas such as project management, human resource management, customer service, or retail management.

OREGON TECH TRANSFER COURSES

The Business Department, 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 Sharon Parker, 503-594-3075 or sharonp@clackamas.edu.

BUSINESS ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-131	Introduction to Business Computing	4
WR-121**	English Composition	4
— —	*PE/Health/Safety/First Aid requirement (see page 82)	1
WINTER TERM		
BA-224	Human Resource Management	4
BA-226	Business Law I	4
BA-285*	Human Relations in Business	4
— —	Business program electives	3-6
SPRING TERM		
BA-205	Business Communications with Technology	4
BA-206	Management Fundamentals	4
BA-223	Principles of Marketing	4
— —	Business program electives	3-4

BUSINESS ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-211	Financial Accounting I	4
— —	Business program electives	12
WINTER TERM		
BA-212	Financial Accounting II	4
WR-227	Technical Report Writing	4
— —	Business program electives	6-8

SPRING TERM

BA-213	Decision Making with Accounting Information	4
BA-217	Budgeting for Managers	3
BA-280	Business/CWE	3
— —	Business program electives	4

Credits required for this degree: 90-96

***RELATED INSTRUCTION REQUIREMENTS**

Computation: BA-104
 Communication: WR-121
 Human Relations: BA-285
 PE/Health/Safety/First Aid: At least 1 credit
 **WRD-098 or placement in WR-121 required

BUSINESS PROGRAM ELECTIVES

Any Business Administration (BA) or Business Technology (BT) course not included in the Business AAS program or any course from the following:

COURSE		CREDITS
CS-181	CMS Web Development	3
CS-125H	HTML & Web Site Design	3
CS-135S	Microsoft Excel	3
COMM-111	Public Speaking	4
EC-201	Principles of Economics: MICRO	4
EC-202	Principles of Economics: MACRO	4

Complete all AAS Business requirements plus the following to satisfy requirements for the Business Management Certificate:

COURSE		CREDITS
BA-119	Project Management Practices	2
BA-251	Supervisory Management	3

Complete all AAS Business requirements plus the following to satisfy requirements for the Human Resource Management Certificate:

COURSE		CREDITS
BA-208	Employee and Labor Relations	4
BA-229	Employment Law	4
BA-250	Small Business Management	3
BA-254	Basic Compensation & Benefits	4

Complete all AAS Business requirements plus the following to satisfy requirements for the Marketing Certificate:

COURSE		CREDITS
BA-156	Business Forecasting	3
BA-238	Sales	4
BA-239	Advertising	4
BA-261	Consumer Behavior	4

Business Management

Certificate

PROGRAM CODE: CC.BUSMANAGEMENT

This certificate focuses on basic management and leadership skills, motivation, decision-making, ethics, workflow analysis, ergonomics, personality and human relations, communications, technological innovations and adapting to change.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)

- 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 (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 an understanding of fundamental business concepts through the integration of the functional areas of business into a comprehensive plan;
- 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 all the programs learning outcomes for the Management Fundamentals Career Pathway Certificate.

CAREERS

Career opportunities include management trainee, first-line supervisory, management analyst, merchandiser, or marketing/sales representative in small and medium-sized retail and service companies.

For information call Sharon Parker, 503-594-3075 or sharonp@clackamas.edu.

BUSINESS MANAGEMENT CERTIFICATE

		CREDITS
FALL TERM		
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-131	Introduction to Business Computing	4
WR-121**	English Composition	4
WINTER TERM		
BA-119	Project Management Practices	2
BA-224	Human Resource Management	4
BA-226	Business Law I	4
BA-251	Supervisory Management	3
BA-285*	Human Relations in Business	4
SPRING TERM		
BA-206	Management Fundamentals	4
BA-211	Financial Accounting I	4
BA-217	Budgeting for Managers	3
BA-223	Principles of Marketing	4
BA-280	Business/CWE	3

Credits required for certificate 50

***RELATED INSTRUCTION REQUIREMENTS**

Computation: BA-104
 Communication: WR-121
 Human Relations: BA-285
 **WRD-098 or placement in WR-121 required
 All courses in this program can be applied to partially satisfy requirements in the Business AAS degree.

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.

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.

CAREERS

Career opportunities include frontline or entry-level supervisory positions in retail, manufacturing, sales, and service industries.

For information contact Sharon Parker, 503-594-3075 or sharonp@clackamas.edu.

MANAGEMENT FUNDAMENTALS CAREER PATHWAY CERTIFICATE

COURSE		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-121*	English Composition	4
<i>Credits required for certificate</i>		18

*WRD-098 or placement in WR-121 required

All courses in this program can be applied to satisfy requirements in the Business Management certificate.

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.

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.

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.

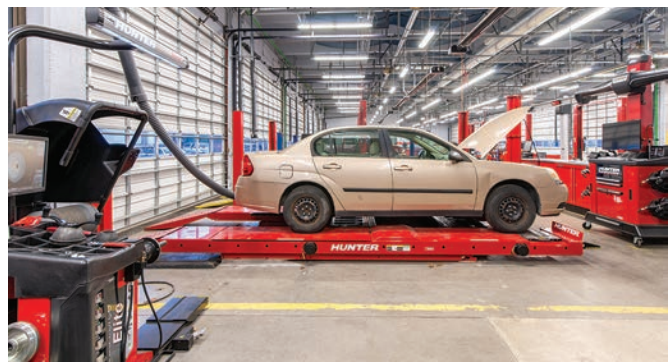
For information contact Laurette Scott, 503-594-3840 or laurette@clackamas.edu

FALL TERM		CREDITS
ED-130	Comprehensive Classroom Management	3
ED-220	Introduction to CTE in Oregon	3
WINTER TERM		
ED-100	Introduction to Education	
or ED-200	Foundations of Education	3-4
ED-229	Learning & Development	3
*ED-169	Overview of Students with Special Needs	3
or ED-254	Instructional Strategies for Dual Language Learners	3
SPRING TERM		
ED-131	Instructional Strategies	3
ED-258	Multicultural Education	3
ED-280	Practicum/CWE	6
<i>Credits required for degree</i>		27-28

Proof of College (100) level English/Language Arts and Math credits is required for licensure

Completion of ED-113 (fall term) or ED-114 (spring term) is required for the Restricted CTE License

*Completion of both ED-169 and ED-254 is highly recommended for licensure



Clinical Laboratory Assistant/ Phlebotomy

Certificate

PROGRAM CODE: CC.CLINLABASSTPHLB

Clinical laboratory assistants serve a diverse ancillary role assisting other laboratory personnel, physicians and patients. Their duties may include specimen collection and handling, data entry, laboratory billing practices, back office skills, and the performance of waived testing according to standard operating procedures. Students are trained in all aspects of medical laboratory support personnel, including phlebotomy, specimen processing, quality control, laboratory orientation, and regulation. Students will participate in unpaid, supervised externships in ambulatory or acute care laboratory settings. See website below for program mission statement.

The CCC Clinical Laboratory Assistant/Phlebotomy (CLA) program is approved through the National Accrediting Agency for Clinical Laboratory Science (NAACLS), 5600 N River Rd, Suite 720, Rosemont, IL, 60018, 773-714-8880, www.naacls.org

PROGRAM REQUIREMENTS AND PREREQUISITES

Students who wish to apply to the CLA program are welcome to apply for our fall cohort. The CLA applications may be downloaded from our website.

To determine the availability of applications and the appropriate deadlines for each cohort, please visit the Health Sciences website: www.clackamas.edu/clinical-lab-assistant.

Applicants are advised that a high level of dexterity, the ability to multitask, and a high degree of attention to detail are required for the successful completion of this program. For a complete list of Essential Functions please visit the above website.

DURING THE APPLICATION PROCESS, CLA APPLICANTS MUST:

- Meet appropriate placement scores in reading, writing, and math by either taking the placement exams or by providing proof of comparable assessment. The CLA program accepts competencies in writing, math, and reading as measured by CCC placement assessments dated no earlier than 2004, or previous college coursework as documented on official college transcripts. To be eligible to apply, students must show placement by: 1) passing WRD-098 or placement in WR-101; 2) passing WRD-090 or placement in WRD-098.
- Have completed MA-110 Medical Terminology, and MTH-050 Technical Mathematics I or MTH-065 Algebra II. Curriculum prerequisites and requirements may be subject to change. In order to assure students have the most current information, please review the department website.

- Provide; 1) proof of a recent physical examination by a licensed healthcare provider, 2) required immunizations, 3) a current American Heart Association (AHA) or American Safety and Health Institute (ASHI) Healthcare Provider CPR, First Aid card, and complete a criminal history background check and drug testing as arranged by the Health Sciences department. Students may also be subject to a second drug and criminal screen just prior to clinical placement depending on clinical site requirements. CLA students will be required to participate in unpaid, supervised externships in ambulatory or acute care laboratory settings. For a list of community partners, please visit the website.

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 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-100 Basic Speech Communication or

COMM-218 Interpersonal Communication)

- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

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

- demonstrate the ability to serve in an entry-level position as a CLA including using correct lab, medical, anatomical terminology to effectively and appropriately communicate, both verbally and non-verbally in the health-care setting;
- following SOP, demonstrate proficiency in all types of blood and body fluid collection techniques and the skill to prepare the specimens for analysis displaying effective anatomical understanding;
- perform and evaluate the preparation and use of appropriate reagents, standards and controls with the entry-level scope of practice;
- understand, apply and communicate state and national laboratory regulations, including infection control, health and safety, quality management and ethical considerations;
- perform and record vital sign measurements using information systems as well as other forms of documentation as needed;
- identify and report potential pre-analytical, analytical, and post-analytical errors, demonstration of the correct use of quality control.

CLINICAL LABORATORY ASSISTANT/PHLEBOTOMY APPLICATION REQUIREMENTS

Application packets with admission procedures and requirements are available online: www.clackamas.edu/clinical-lab-assistant.

*Clinical Laboratory Assistant/Phlebotomy continued...***CAREERS**

Career opportunities may include but are not limited to phlebotomist, laboratory specimen processor, waived testing analyzer, medical research assistant and physician office laboratory assistant.

Clinical Laboratory Assistant – Oregon Tech BS Clinical Laboratory Science

OREGON TECH TRANSFER COURSES

The Clinical Laboratory program, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelors of Science in Clinical Laboratory Science 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 more information, contact: healthsciences@clackamas.edu.

CLINICAL LABORATORY ASSISTANT/PHLEBOTOMY CERTIFICATE PREREQUISITES

The following prerequisites must be completed prior to the start of the student's cohort. Curriculum prerequisites and requirements may change yearly. To see prerequisites or requirements, please review the department website.

COURSE		CREDITS
MA-110	Medical Terminology	4
MTH-050	Technical Mathematics I or MTH-065 Algebra II	4

CLINICAL LABORATORY ASSISTANT/PHLEBOTOMY CERTIFICATE

FALL TERM		CREDITS
BI-120*	Introduction to Human Anatomy and Physiology	4
CLA-100	Introduction to Health Care	2
CLA-101	Clinical Laboratory Assistant Skills I	3
CLA-101L	Clinical Laboratory Assistant Skills Lab I	1
CLA-118	Phlebotomy for Clinical Laboratory Assistants	1
CLA-118L	Phlebotomy for Clinical Laboratory Assistant Lab	1
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
WINTER TERM		
CLA-102	Clinical Laboratory Assistant Skills II	3
CLA-102L	Clinical Laboratory Assistant Skills Lab II	1
CLA-115	Laboratory Administrative Skills	2
CLA-119	Laboratory/Phlebotomy Practicum	3
CLA-130	Specimen Collection	1
CS-120	Survey of Computing	4
SPRING TERM		
CLA-103	Clinical Laboratory Assistant Skills III	3
CLA-103L	Clinical Laboratory Assistant Skills Lab III	1
CLA-120	Laboratory/Phlebotomy Practicum II	4
CLA-125	Introduction to Clinical Research	2
COMM-100	Basic Speech Communication	
or COMM-111	Public Speaking	
or COMM-218	Interpersonal Communication	3-4
PSY-101	Human Relations	3
<i>Credits required for certificate</i>		45-47

*Additional options to meet biology requirement: pass BI-101 & BI-102 with C or better or successfully complete the entire BI-231, BI-232, BI-233, Anatomy & Physiology series.

Current First Aid card and Healthcare Provider level CPR (AHA or ASHI) card are required during practicums and must be taken prior to the first term practicum. All CLA students will be required to complete a criminal history background, provide proof of immunization, and take a drug test.

All clinical practicum courses are Pass/No Pass. CLA-130 may be taken for either a letter grade or pass/no pass option. All other courses are letter grades only and must be passed with a C grade or better in order to continue to the next term.

Core curriculum is sequential and may not be taken out of order, with the exception of CLA-100 which may be taken prior to beginning the program. Curriculum is intended to be completed in one academic year.

Individuals who have been found guilty of a felony or pleaded guilty to a felony may not be eligible for clinical practicum placement or be eligible to take the National exams.

Basic Health Sciences

Career Pathway Certificate

PROGRAM CODE: CC.BASICHEALTH

The Basic Health Sciences Career Pathway Certificate prepares students for a career in health care by introducing them to the soft skills, communication skills and terminology necessary to interact within a breadth of health sciences disciplines. Students will be further exposed to the important safety and confidentiality regulations in the field and will have the opportunity to earn certifications in HIPAA and blood-borne pathogens. Courses in this Career Pathway Certificate fulfill requirements for the Clinical Laboratory Assistant/Phlebotomy program and are either required or encouraged for all other Health Sciences programs at Clackamas Community College.

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.

CAREERS

Students who successfully complete this pathway will be prepared to assist and interact with healthcare professionals. Their duties may include data input, intake/reception, and other administrative duties as assigned in a variety of health-care and clinical settings.

For information contact Marilyn Braught, 503-594-0634 or marilyn.braught@clackamas.edu.

BASIC HEALTH SCIENCES CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
CLA-100	Introduction to Health Care	2
MA-110	Medical Terminology	4
MTH-065	Algebra II	4
WR-121	English Composition	4
PSY-101	Human Relations	3

Credits required for degree 17

Computer-Aided Manufacturing

Associate of Applied Science Degree

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits- See course list on page 82)

- 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.

CAREERS

Career opportunities may include CNC programmer and operator, CAD technician, manufacturing engineering technician and CAD/CAM technician.

For information contact Mike Mattson, 503-594-3322 or mattsonm@clackamas.edu.

MANUFACTURING ENGINEERING TECHNOLOGY

(OREGON TECH TRANSFER COURSES)

The Industrial Technology Department, in partnership with Oregon Tech, offers a significant number of transferable classes into Oregon Tech's Manufacturing Engineering Technology degree program.

Contact the Industrial Technology Department for more information, 503-594-3318.

COMPUTER-AIDED MANUFACTURING

ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FIRST TERM		CREDITS
CDT-102	Sketching & Problem Solving	3
MFG-111	Machine Tool Fundamentals I	6
MTH-050**	Technical Mathematics I	4
WR-101**	Communication Skills: Occupational Writing	3

SECOND TERM

CDT-108A	Introduction to SolidWorks	3
MFG-105	Dimensional Inspection	2
MFG-109	Computer Literacy for Technicians	3
MFG-112	Machine Tool Fundamentals II	6
MTH-080**	Technical Mathematics II	3

THIRD TERM

CDT-225	Advanced SolidWorks	3
MFG-106	Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing	3
MFG-113	Machine Tool Fundamentals III	6
MFG-221	Materials Science	3
— —	CAD/CAM program elective	3

COMPUTER-AIDED MANUFACTURING

ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FOURTH TERM		CREDITS
CDT-223	Inventor Fundamentals	3
MFG-130	Basic Electricity I	3
MFG-201	CNC I: Set-Up and Operation	4
MFG-204	Computer-Aided Manufacturing I	4
— —**	Human Relations requirement (see page 82)	3

FIFTH TERM

MFG-107	Industrial Safety & First Aid	3
MFG-202	CNC II: Programming & Operation	4
MFG-205	Computer-Aided Manufacturing II	4
MFG-209	Programming & Automation for Manufacturing	3

SIXTH TERM

MET-170	Introduction to Manufacturing Processes	3
MFG-203	CNC III: Applied Programming & Operation	3
MFG-206	Computer-Aided Manufacturing III	3
MFG-219	Robotics	3
MFG-280	Manufacturing Technology/CWE	4

Credits required for degree 98

*Computer-Aided Manufacturing continued...***COMPUTER-AIDED MANUFACTURING PROGRAM ELECTIVES**

Any course with a CDT, EET, MFG, RET or WLD prefix not included in the Computer-Aided Manufacturing program.

Students with specialized job training needs may be eligible to substitute some classes. Consult your instructor or the department chair for more information.

**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.

Computer & Network Administration

Certificate**Associate of Applied Science Degree****PROGRAM CODE: AAS.COMPNETADMIN, 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 Associate of Applied Science degree. 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 Associate of Applied Science articulates to a Bachelor of Applied Science in Technology and Management at Oregon Tech.

PROGRAM REQUIREMENTS

Prerequisites for first term classes include completed course work for CS-120 Survey of Computing or placement in CS-121 Computer Applications, MTH-060 Algebra I or placement in MTH-065 Algebra II, and WRD-098 Introductory Reading & Writing 2: College Preparation or placement in WR-121 English Composition. This is an open program. Students may take any class in the program for which they have completed the requisites.

RELATED INSTRUCTION OUTCOMES**Computation (3 credits- See page 82 for course list)**

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3-4 credits- See page 82 for course list)

- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 credit- courses with HE, HPE, or PE prefix) (NOT REQUIRED FOR THE CERTIFICATE)

- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES**Computer & Network Administration AAS Degree**

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

- demonstrate all the program learning outcomes of the Computer & Network Administration Certificate;
- 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.

PROGRAM OUTCOMES**Computer & Network Administration Certificate Degree**

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.

CAREERS

Career opportunities include network specialist, computer service technician, field engineer, customer service engineer, computer technician, and PC/LAN support specialist.

For information contact Rick Carino, 503-594-3167, or rcarino@clackamas.edu.

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.

COMPUTER & NETWORK ADMINISTRATION CERTIFICATE

FALL TERM		CREDITS
CS-140	Introduction to Operating Systems	4
CS-160	Computer Science Orientation	4
CS-225	Computer End User Support	3
CS-227	Computer Hardware & Repair	4
WINTER TERM		
CS-151	Networking I	4
CS-228	Computer OS Maintenance & Repair	4
CS-240W	Windows Desktop Administration	3
WR-101 or WR-121	Communication Skills: Occupational Writing English Composition	3-4
SPRING TERM		
CS-152	Networking II	4
CS-240L	Linux Administration I	4
CS-279W	Windows Server Administration	4
SUMMER TERM		
CS-125H	HTML & Web Site Design	3
CS-280	Computer Science/CWE	3
— —	Computation requirement (see page 82)	3
— —	Human Relations requirement (see page 82)	3-4
<i>Credits required for certificate</i>		53-55

**COMPUTER & NETWORK ADMINISTRATION
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

Complete certificate program.

**COMPUTER & NETWORK ADMINISTRATION
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FALL TERM		CREDITS
CS-135DB	Microsoft Access	3
CS-280	Computer Science/CWE	3
— —	Computer & Network Administration program elective	6-8
— —	PE/Health/Safety/First Aid requirement (see page 82)	1
WINTER TERM		
CS-240M	macOS Administration	3
CS-275	Database Design	3
CS-284	Network Security	3
CS-288W	Windows Network Administration	4
SPRING TERM		
CS-280	Computer Science/CWE	3
CS-289	Web Server Administration	4
CS-297N	Network Capstone	4
— —	Computer & Network Administration program elective	3-4
<i>Credits required for degree</i>		93-98

COMPUTER & NETWORK ADMINISTRATION PROGRAM ELECTIVES

Complete 9-12 credits from the following:

COURSE	CREDITS	
BA-101	Introduction to Business	
or BA-103	Business Strategies for Computer Consultants	
or BA-120	Project Management Fundamentals	3-4
BA-131	Introduction to Business Computing	4
BT-177	Microsoft Project	3
— —	Any computer science course numbered CS-125 or higher	3-4

Note: Students may not take more than six credits of CWE in any one term.

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.

PROGRAM REQUIREMENTS

Prerequisites for first term classes include completed course work for CS-120 Survey of Computing or placement in CS-121 Computer Applications, MTH-060 Algebra I or placement in MTH-065 Algebra II, and WRD-098 Introductory Reading & Writing 2: College Preparation or placement in WR-121 English Composition. This program is an open program, meaning that students may take any class in the program for which they have completed the prerequisite.

RELATED INSTRUCTION OUTCOMES**Computation (3 credits- See page 82 for course list)**

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits- See page 82 for course list)

- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES**Computer Application Specialist Certificate Degree**

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.

continued

Computer Application Specialist continued...

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 or software consultant.

For information contact Diane Sargent, 503-594-3830 or dianes@clackamas.edu.

COMPUTER APPLICATION SPECIALIST CERTIFICATE

FALL TERM		CREDITS
CS-140	Introduction to Operating Systems	4
	Computer Science Orientation	4
CS-227	Computer Hardware & Repair	4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
WINTER TERM		
CS-135S	Microsoft Excel	3
CS-135W	Microsoft Word	3
CS-151	Networking I	4
CS-240W	Windows Desktop Administration	3
SPRING TERM		
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
SUMMER TERM		
CS-125H	HTML & Web Site Design	3
CS-280	Computer Science/CWE	3
— —	Computation requirement (see page 82)	3
— —	Human Relations requirement (see page 82)	3

Credits required for certificate: 53-54

Criminal Justice

Associate of Applied Science Degree

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-098 College Math Foundations)

- 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 (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.

CAREERS

Career opportunities include law enforcement officer at the local, state or national level, loss prevention officers and Homeland Security officers. Many departments require college course work or degrees in addition to civil service requirements.

For general information or information about transferring to a four-year institution contact Sharron Furno, 503-594-6224 or sharron.furno@clackamas.edu.

CRIMINAL JUSTICE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
CJA-110	Introduction to Law Enforcement	3
CJA-122	Criminal Law	4
MTH-098	College Math Foundations	4
WR-121	English Composition	4
WINTER TERM		
CJA-101	Criminology	
or CJA-201	Juvenile Delinquency	4
CJA-120	Introduction to Courts	3
CJA-203	Crisis Intervention	3
LIB-101	Introduction to Library Research	1
WR-122	English Composition	4
SPRING TERM		
CJA-130	Introduction to Corrections	3
CJA-243	Drugs, Crime and the Law	3
HD-161	Multicultural Awareness	3
PSY-219	Introduction to Abnormal Psychology	4

**CRIMINAL JUSTICE ASSOCIATE OF APPLIED SCIENCE DEGREE:
2ND YEAR**

FALL TERM		CREDITS
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	4
— —	Criminal Justice program electives	3-4

WINTER TERM		CREDITS
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
— —	Criminal Justice program electives	3-4

SPRING TERM		CREDITS
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
or HD-102	Service Learning Experience	3
<i>Credits required for degree</i>		90-92

CRIMINAL JUSTICE PROGRAM ELECTIVES

Any CJA course not included in the Criminal Justice AAS program, or any of the following:

COURSE		CREDITS
GRN-183	Death and Dying	3
HST-131	History of Crime & Punishment in Western Civilization	4

Criminal Justice, Corrections Option

Associate of Applied Science Degree

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-098 College Math Foundations)

- 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 (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.

CAREERS

Career opportunities are generally in jail and prison facilities as well as community corrections agencies and may include correctional officer, correctional counselor and probation and parole officer.

For more information, contact Sharron Furno 503-594-6224 or sharron.furno@clackamas.edu

CORRECTIONS ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
CJA-110	Introduction to Law Enforcement	3
CJA-122	Criminal Law	4
MTH-098	College Math Foundations	4
WR-121	English Composition	4

WINTER TERM		CREDITS
CJA-101	Criminology	4
or CJA-201	Juvenile Delinquency	4
CJA-120	Introduction to Courts	3
CJA-203	Crisis Intervention	3
LIB-101	Introduction to Library Research	1
WR-122	English Composition	4

SPRING TERM		CREDITS
CJA-130	Introduction to Corrections	3
CJA-243	Drugs, Crime and the Law	3
HD-161	Multicultural Awareness	3
PSY-219	Introduction to Abnormal Psychology	4

continued

Criminal Justice, Corrections Option continued...

CORRECTIONS ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
CJA-223	Criminal Justice Ethics	3
CJA-252	Introduction to Restorative Justice	3
HDF-260	Understanding Child Abuse and Neglect	4
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
— —	Corrections program elective	3-4
WINTER TERM		CREDITS
CJA-134	Correctional Institutions	3
CJA-170	Careers in Criminal Justice	3
HPE-296	Health and Fitness for Criminal Justice	3
HS-156	Conducting Human Service Interviews	3
HS-211	Infectious Diseases and Harm Reduction	1
HS-216	Group Counseling Skills	3
SPRING TERM		CREDITS
CJA-232	Case Management	3
CJA-215	Sexual Abuse and Human Trafficking	3
CJA-250	Reporting, Recording & Testifying	4
CJA-270	Criminal Justice Capstone	3
CJA-280	Criminal Justice/Corrections/CWE	3
or HD-102	Service Learning Experience	3
<i>Credits required for degree</i>		91-92

CORRECTIONS PROGRAM ELECTIVES

Any CJA course not included in the Corrections program, or any of the following:

COURSE		CREDITS
GRN-183	Death and Dying	3
HST-131	History of Crime & Punishment in Western Civilization	4

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-098 College Math Foundations)

- 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 (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.

CAREERS

Career opportunities are within secure facilities or in the community and may include youth correctional counselor, juvenile detention officer and group life coordinator.

For more information, contact Sharron Furno 503-594-6224 or sharron.furno@clackamas.edu

JUVENILE CORRECTIONS CERTIFICATE

FALL TERM		CREDITS
CJA-252	Introduction to Restorative Justice	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
MTH-098	College Math Foundations	4
WR-121	English Composition	4
WINTER TERM		CREDITS
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
SPRING TERM		CREDITS
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	4
<i>Credits required for certificate</i>		45



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).

PROGRAM REQUIREMENTS AND PREREQUISITES

This limited entry program requires the applicant to meet the program requirements prior to being formally admitted into the program. The requirements are to be completed in a four-phase process, with specific timelines for each phase. Information regarding specific requirements and timelines are located at www.clackamas.edu/dental-assistant.

The applicant must follow and complete all steps to be invited to continue through each phase of the admission process, with the final phase resulting in the opportunity to be invited for admission.

DA students will participate in unpaid, supervised externships in the dental care setting.

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.

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 Communication Skills: Occupational Writing or WR-121 English Composition)

- 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.

CAREERS

Career opportunities may include but are not limited to managed care facilities, private dental practices, state and county clinics, dental schools and the insurance industry.

Application packets with admission procedures and requirements are available online at www.clackamas.edu/dental-assistant.

For more information, contact healthsciences@clackamas.edu.

DENTAL ASSISTANT CERTIFICATE

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	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
SECOND TERM		
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
THIRD TERM		
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	Technical Mathematics I	
or MTH-065	Algebra II	4
<i>Credits required for certificate</i>		53-54

Dental lab schedules (am/pm) are based on lottery. Information will be provided at orientation.

Current American Heart Association (AHA) BLS Provider (provider level CPR) and First Aid (AHA Heartsaver) certification are required during practicums. All DA 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.

Students must achieve a C or higher grade in all required courses prior to advancing to the next term.

Core curriculum is sequential and may not be taken out of order. Core curriculum is intended to be completed over three consecutive terms.

Digital Media Communications

Associate of Applied Science Degree

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.

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-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-100 Basic Speech Communication or PSY-101 Human Relations)

- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 credit-courses with HE, HPE, or PE prefix)

- 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.

CAREERS

Some of the careers available in media 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 and other emerging opportunities.

OREGON TECH TRANSFER COURSES

The Art Department, 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 Nora Brodnicki, 503-594-3036 or norab@clackamas.edu.

DIGITAL MEDIA COMMUNICATIONS

ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
ART-115	Basic Design: 2-Dimensional Design	4
ART-262	Digital Photography & Photo-Imaging	3
DMC-100	Introduction to Media Arts	3
WR-121	English Composition	4
— —	PE/Health/Safety/First Aid requirement (see page 82)	1
WINTER TERM		
COMM-100 or PSY-101	Basic Speech Communication Human Relations	3
DMC-104	Digital Video Editing	4
MTH-065 or MTH-050 or higher level math or CS-161	Algebra II Technical Mathematics I Computer Science I	4
— —	Digital Media Communications program electives	4
SPRING TERM		
J-211 or COMM-212	Mass Media & Society Mass Media & Society	4
— —	Focus Area courses	4-8
— —	Digital Media Communications program electives	8

DIGITAL MEDIA COMMUNICATIONS

ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
MUS-247 or DMC-247	Sound for Media Sound for Media	3
— —	Focus Area courses	8-10
— —	Digital Media Communications program electives	4
WINTER TERM		
DMC-291	Digital Media Communications Portfolio Project I	3
— —	Focus Area courses	13-15
SPRING TERM		
BA-101	Introduction to Business	4
DMC-280	Digital Media Communications/CWE	3
DMC-292	Digital Media Communications Portfolio Project II	3
— —	Focus Area course	4
<i>Credits required for degree</i>		90

ADDITIONAL COURSES FROM FOCUS AREA

Complete all courses from one of the following Focus Areas

MOTION GRAPHICS & COMPUTER ANIMATION

COURSE		CREDITS
DMC-106	Animation & Motion Graphics I	3
DMC-107	Animation & Motion Graphics II	3
ART-131	Introduction to Drawing	4
DMC-221	Introduction to 2D Animation: Design & Techniques	3
DMC-222	Advanced 2D Animation: Design & Techniques	3
ART-225	Computer Graphics I	3
ART-226	Computer Graphics II	3
MUS-171	Sound Design	2
WR-265	Digital Storytelling	4

JOURNALISM

COURSE		CREDITS
ART-120	Creativity/Ideation	2
or MUS-171	Sound Design	
ART-225	Computer Graphics I	3
J-134	Photojournalism	4
J-215	College Newspaper: Writing & Photography	3
J-216	Writing for Media	4
J-220	Pod, Broad and Social - Journalism Across Platforms	4
or DMC-230	Documentary Film Production	
J-226	Introduction to College Newspaper: Design & Production	4
WR-240	Introduction to Creative Writing: Nonfiction	4
or WR-265	Digital Storytelling	4

VIDEO PRODUCTION

COURSE		CREDITS
DMC-106	Animation & Motion Graphics I	3
ART-120	Creativity/Ideation	2
or MUS-171	Sound Design	
DMC-205	Directing for Film & Video	3
DMC-230	Documentary Film Production	4
DMC-264	Digital Filmmaking	4
DMC-265	Advanced Digital Filmmaking	4
ENG-194	Introduction to Film	4
or DMC-194	Introduction to Film	
WR-262	Introduction to Screenwriting	4

MUSIC & SOUND FOR MEDIA

COURSE		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
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

DMC PROGRAM ELECTIVES

Additional selected electives must be from different subject areas, from the following list of prefixes:

ART, BA, COMM, CS, DMC, ENG, J, MUS, TA, or WR

Entry Level Journalist

Career Pathway Certificate

PROGRAM CODE: CC.ELVLJRNLS

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 news gathering.

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.

CAREERS

Career opportunities include work in radio, television stations, motion picture industry, as well as advertising and promotions.

For information contact Melissa Jones, 503-594-3261 or melissaj@clackamas.edu.

continued

Entry Level Journalist continued...

ENTRY LEVEL JOURNALIST CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
DMC-100	Introduction to Media Arts	3
DMC-104	Digital Video Editing	4
J-220	Pod, Broad and Social - Journalism	
	Across Platforms	4
WR-121	English Composition	4
WINTER TERM		
COMM-100	Basic Speech Communication	
or PSY-101	Human Relations	3
DMC-230	Documentary Film Production	4
J-215	College Newspaper: Writing & Photography	3
J-216	Writing for Media	4
SPRING TERM		
DMC-291	Digital Media Communications Portfolio Project I	3
J-134	Photojournalism	4
J-211	Mass Media & Society	4
J-226	Introduction to College Newspaper: Design & Production	4
<i>Credits required for certificate</i>		44

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.

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.

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; and digital media artists and animators.

For information contact Mark Devendorf, 503-594-6247 or mark.devendorf@clackamas.edu.

VIDEO PRODUCTION TECHNICIAN CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
DMC-100	Introduction to Media Arts	3
DMC-104	Digital Video Editing	4
DMC-247	Sound for Media	
or MUS-247	Sound for Media	3
DMC-264	Digital Filmmaking	4
WINTER TERM		
DMC-106	Animation & Motion Graphics I	3
COMM-100	Basic Speech Communication	
or PSY-101	Human Relations	3
WR-121	English Composition	4
SPRING TERM		
BA-101	Introduction to Business	4
DMC-242	Field Recording for Media	1
DMC-291	Digital Media Communications Portfolio Project I	
or DMC-292	Digital Media Communications Portfolio Project II	3
WR-262	Introduction to Screenwriting	4
<i>Credits required for certificate</i>		36

Early Childhood Education & Family Studies

Certificate

Associate of Applied Science Degree

PROGRAM CODES: AAS.EARLYCHILDFAM, 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.

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 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- ED-258 Multicultural Education)

- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (2-3 credits-courses with HE, HPE, or PE prefix) NOT REQUIRED FOR CERTIFICATE

- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Early Childhood Education & Family Studies AAS Degree

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

- promote children’s development and learning by creating and maintaining environments that are healthy, respectful, supportive and challenging for each child;
- build family and community partnerships based on understanding and valuing the complex characteristics of children’s families and communities;
- observe, document and assess young children;
- implement developmentally effective approaches, depending on children’s ages, characteristics and the settings within which teaching and learning occurs;
- use content knowledge to build meaningful curriculum by designing, implementing and evaluating experiences that promote positive development and learning for each and every young child;
- identify and conduct themselves as members of the early childhood profession and be continuous collaborative learners.

PROGRAM OUTCOMES

Early Childhood Education & Family Studies Certificate

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.

CAREERS

After completing the two-year AAS in Early Childhood Education & Family Studies, students will be prepared to work in a variety of educational settings as lead teacher in private and public early learning programs serving infants, toddlers, and preschoolers and as teacher assistants in kindergarten – 3rd grade classrooms. Additionally, students will be prepared to work as family support personnel (e.g. family advocates, parent practitioners, family life paraprofessionals, etc.) in various education settings or child and family support agencies.

For information contact Dawn Hendricks, 503-594-6158 or dawn.hendricks@clackamas.edu

EARLY CHILDHOOD EDUCATION & FAMILY STUDIES CERTIFICATE

SUMMER TERM		CREDITS
MTH-050	Technical Mathematics I	
	or MTH-065 Algebra II	
	or MTH-098 College Math Foundations	4
WR-101	Communication Skills: Occupational Writing	
	or WR-121 English Composition	3-4
FALL TERM		
ECE-150	Introduction to Early Childhood Education & Family Studies	3
ECE-235	Nutrition, Music & Movement in Early Childhood Education	3
ED-100	Introduction to Education	4
HDF-225	Prenatal, Infant & Toddler Development	3
— —	PE/Health/Safety/First Aid requirement (see page 82)	2-3
WINTER TERM		
ECE-121	Observation and Guidance I in ECE Settings	4
ECE-154	Language & Literacy Development	3
ECE-240	Environments and Curriculum Planning	3
HDF-247	Preschool Child Development	3
SPRING TERM		
ECE-179	The Professional in Early Childhood Education and Family Studies	2
ECE-221	Observation & Guidance II in ECE Settings	4
ECE-280	Early Childhood Education/CWE	3
ED-258	Multicultural Education	3
HDF-140	Contemporary American Families	
	or SOC-210 Marriage, Family, & Intimate Relations	3-4
<i>Credits required for certificate</i>		50-53

EARLY CHILDHOOD EDUCATION & FAMILY STUDIES ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

EARLY CHILDHOOD EDUCATION & FAMILY STUDIES ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
ECE-239	Helping Children and Families Cope with Stress	3
ECE-241	Environments and Curriculum Planning: Infants and Toddlers	3
HDF-260	Understanding Child Abuse and Neglect	4
— —	Early Childhood Education program electives	2

Early Childhood Education & Family Studies.....

WINTER TERM

ECE-289	The Project Approach in Early Childhood Education	1
ECE-291	Practicum II	4
ED-169	Overview of Students with Special Needs	3
ED-254	Instructional Strategies for Dual Language Learners	3
— —	Early Childhood Education program electives	3

SPRING TERM

ECE-177	Maximizing the Outdoors in ECE Curriculum	3
ECE-292	Practicum III	4
ED-114	Instructional Strategies in Math & Science	3
ED-246	School, Family & Community Relations	4

Credits required for degree 90-93

EARLY CHILDHOOD EDUCATION & FAMILY STUDIES PROGRAM ELECTIVES

COURSE		CREDITS
BA-101	Introduction to Business	4
COMM-100	Basic Speech Communication	3
COMM-140	Introduction to Intercultural Communication	4
ECE-139	Program Management in ECE	1
ECE-142	Media, Technology and the Influences on Child Development	1
ECE-143	Kindergarten Readiness	1
ECE-144	Working with the Gifted Young Child	1
ED-150	Creative Activities for Children	3
ED-229	Learning & Development	3
ED-235	Educational Technology	3
FYE-101	First Year Experience Level I	2
HS-154	Community Resources	3
HST-138	History of Love, Marriage and the Family in Western Civilization	4
PSY-101	Human Relations	3
PSY-205	Psychology as a Social Science	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-122	English Composition	4
WS-101	Introduction to Women's Studies	4

Electronics Engineering Technology

*Certificate
Associate of Applied Science Degree*

PROGRAM CODE: AAS.ELECTRONENGTECH, 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.

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.

Physical Education/Health/Safety/First Aid (1 course - MFG-107 Industrial Safety & First Aid) NOT REQUIRED FOR CERTIFICATE

- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Electronics Engineering Technology AAS Degree

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.

PROGRAM OUTCOMES

Electronics Engineering Technology Certificate Degree

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.

CAREERS

Career opportunities may include engineering technician, manufacturing equipment technician, field services technician and operators and processors with large and small employers in high-tech industries.

For information contact the Industrial Technology Department, 503-594-3318.

ELECTRONICS ENGINEERING TECHNOLOGY CERTIFICATE

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-121	English Composition	4
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-111	College Algebra	5
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
SM-280	Electronics & Microelectronics/CWE	2
— —	Human Relations requirement (see page 82) (Recommended: PSY-101)	3
<i>Credits required for certificate</i>		48

**ELECTRONICS ENGINEERING TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST 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-121	English Composition	4
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-111	College Algebra	5
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-112	Trigonometry and Pre-Calculus	5

**ELECTRONICS ENGINEERING TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FOURTH TERM		CREDITS
EET-127	Semiconductor Circuits I	2
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
— —	Electronics Engineering Technology program electives	3-5

FIFTH TERM

CDT-103	Computer-Aided Drafting I or CDT-108A Introduction to SolidWorks or CDT-223 Inventor Fundamentals	3
EET-225	Mechatronics I	2
EET-227	Semiconductor Circuits II	3
EET-233	Programmable Logic Controllers I	3
MFG-209	Programming & Automation for Manufacturing Electronics Engineering Technology program electives	3 3-5

SIXTH TERM

EET-234	Programmable Logic Controllers II	3
EET-235	Mechatronics II	2
EET-250	Linear Circuits	3
SM-280	Electronics & Microelectronics/CWE Human Relations requirement (see page 82) (Recommended: PSY-101)	4 3
— —	Electronics Engineering Technology program electives	3-5

Credits required for degree **97-103**

ELECTRONICS ENGINEERING TECHNOLOGY PROGRAM ELECTIVES:

Any course with a CDT, EET, MFG, MET, RET, SM, or WLD prefix not included in the Electronics Engineering Technology program.

RECOMMENDED ELECTIVES

CREDITS		
MFG-219	Robotics	3
MFG-140	Principles of Fluid Power	3
CS-140	Introduction to Operating Systems	4
CS-161	Computer Science I	4
WR-227	Technical Report Writing	4
MTH-251	Calculus I	5
PH-211	General Physics with Calculus	5
PH-212	General Physics with Calculus	5
PH-213	General Physics with Calculus	5
MFG-219	Robotics	3

PH-211, 212, 213 and MTH-251 are recommended for students who plan to transfer to Oregon Tech. Oregon Tech will also accept PH-201, 202, and 203. Students should contact Oregon Tech about transferability of these classes.

OREGON TECH TRANSFER COURSES

The CCC 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.



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. A criminal history background check, immunizations, and drug testing will be required.

EMTs in Oregon must be licensed by the state through the Oregon Health Authority's Emergency Medical Services and Trauma Systems (OHA/EMS). National certification is available through the National Registry of Emergency Medical Technicians (NREMT). Each certification requires approved continuing education classes in emergency care for certification renewal. The CCC Emergency Medical Technology (EMT) certificate program includes the required Oregon license and national EMT certification.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-065 Algebra II)

- 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 (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 transport to an appropriate medical facility;
- 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.

CAREERS

Career opportunities that may require EMT training include but are not limited to: firefighter (career or volunteer), paramedic, search and rescue, critical care transport or basic life support transport provider. The EMT certificate can lead to a career as a paramedic if a student wishes to continue their studies and completes the requirements for an AAS-EMT (Associate of Applied Science - EMT) degree at an accredited institution.

For information contact the EMT program director at 503-594-6025 or department at healthsciences@clackamas.edu.

EMERGENCY MEDICAL TECHNOLOGY CERTIFICATE

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-121	English Composition	4
WINTER TERM		
BI-232	Human Anatomy & Physiology II	4
CJA-203	Crisis Intervention	3
COMM-111	Public Speaking	4
EMT-101*	Emergency Medical Technician Part I	5
EMT-109	Emergency Response Communication/Documentation	2
SPRING TERM		
BI-233	Human Anatomy & Physiology III	4
EMT-102	Emergency Medical Technician Part II	5
EMT-107	EMT Rescue	3
EMT-108	Emergency Response Patient Transportation	2
PSY-101	Human Relations	3
<i>Credits required for certificate</i>		56

*Student Petition required

Current American Heart Association Healthcare Provider level CPR is required; criminal history background check, proof of immunization, and students will be asked to take a drug test as arranged by the department.

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.

PROGRAM 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.

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.

CAREERS

Completion of an EST certificate can impact any career.

For information contact Student Academic Support Services Department, 503-594-3475, or www.clackamas.edu/advising.

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.

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.

CAREERS

Career opportunities includes entry level and first-line supervisors in retail and food services.

For more information, contact Beverly Forney, 503-594-3115 or beverlyf@clackamas.edu.

FIRST-LINE SUPERVISOR FUNDAMENTALS CERTIFICATE

Recommended sequence.

COURSE		CREDITS
BA-131	Introduction to Business Computing	4
BA-206	Management Fundamentals	4
BA-214	Business Communications	
or BA-205	Business Communications with Technology	3-4
BA-285	Human Relations in Business	4
<i>Credits</i>		<i>15-16</i>

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.

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 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-218 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.

Fitness Technology continued...

CAREERS

Career opportunities include personal trainer, life coach, nutrition specialist, strength and conditioning specialist, athletic coach, fitness instructor and physical education instructor.

For information contact Tracy Nelson, 503-594-3274 or tracyn@clackamas.edu.

FITNESS TECHNOLOGY CERTIFICATE

FALL TERM		CREDITS
COMM-218	Interpersonal Communication	4
HE-202	Introduction to Fitness Technology Careers	1
PE-240	Strength & Conditioning Theory & Techniques	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Fitness Technology program elective	3
WINTER TERM		
COMM-227	Nonverbal Communication	4
HE-252	First Aid/CPR/AED	3
HPE-295	Health & Fitness for Life	3
— —	Fitness Technology program elective	4
SPRING TERM		
HE-201	Personal Training	3
HE-223	Sports Nutrition	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	
or higher		4-5
PE-280	Physical Education/CWE	3
— —	Fitness Technology program elective	4
<i>Credits required for certificate</i>		45-47

FITNESS TECHNOLOGY PROGRAM ELECTIVES

COURSE		CREDITS
BA-101	Introduction to Business	4
BA-123	Leadership & Motivation	3
ECE-235	Nutrition, Music & Movement in Early Childhood Education	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

Geographic Information Systems (GIS) Technology

Certificate

PROGRAM CODE: CC.GISTECHNOLOGY

The Geographic Information Systems (GIS) Technology Certificate program offers instruction in GIS software, geography, data analysis, cartography, remote sensing, data collection, database theory, and programming. GIS continues to emerge as a top industry supporting business, natural resource management, land-use planning, environmental science, data management, transportation, and other related fields.

The program also includes instruction in research skills, geospatial mathematics, computer programming, human relations skills, and filed competencies.

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-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits - See page 82 for course list)

- Engage in ethical communication processes that accomplish goals.

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.

CAREERS

Career opportunities may include: GIS technician, GIS analyst, mapping technician and survey and remote sensing technician. Job opportunities to apply GIS skills exist in areas such as business, emergency management, health sciences, transportation, urban planning, unmanned aerial systems, and natural resource management.

For information contact Eric Roberts, 503-594-6037 or eric.roberts@clackamas.edu.

GEOGRAPHIC INFORMATION SYSTEMS (GIS) TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
GEO-100	Introduction to Physical Geography	4
or GEO-130	Introduction to Environmental Geography	4
GIS-101	Principles of Geospatial Technology	2
GIS-201	Introduction to Geographic Information Systems	3
GIS-236	Introduction to Programming for GIS	3
MTH-050	Technical Mathematics I	4
or MTH-065	Algebra II	4
SECOND TERM		
GIS-202	Intermediate Geographic Information Systems	3
GIS-237	Advanced Programming for GIS	3
GIS-240	Geospatial Database Development and Management	3
GIS-286	Remote Sensing	3
— —	Human Relations requirement (see page 82)	3
THIRD TERM		
GIS-205	Cartography and Map Making	3
GIS-232	Data Collection & Application	2
GIS-238	GIS Web Mapping and Services	2
GIS-280	GIS/CWE	3
WR-121	English Composition	4
<i>Credits required for certificate</i>		45

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 Associate of Applied Science degree.

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 Communication Skills: Occupational Writing or WR-121 English Composition)

- 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.

CAREERS

Career opportunities include activity director, volunteer coordinator, senior services case worker, information and referral worker, client advocate, and administrative and support personnel in senior residential facilities.

For more information, contact Yvonne Smith at 503-594-3207 or yvonne@clackamas.edu.

GERONTOLOGY CERTIFICATE

FALL TERM		CREDITS
GRN-179	Careers in Gerontology	1
GRN-181	Issues in Aging	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
WR-101	Communication Skills: Occupational Writing	3
or WR-121	English Composition	3-4
— —	Gerontology program elective	5

WINTER TERM

GRN-182	Aging and the Body	3
GRN-184	Aging & the Individual	3
HE-164	Body & Drugs II: Alcohol	3
or HE-263	Body & Drugs III: Marijuana	3
or HE-264	Body & Drugs IV: Other Drugs, Other Addictions	3
HS-154	Community Resources	3
MTH-050	Technical Mathematics I	4
or MTH-065	Algebra II	4
or MTH-098	College Math Foundations	4

SPRING TERM

GRN-183	Death and Dying	3
GRN-280	Gerontology/CWE	3
HS-156	Conducting Human Service Interviews	3
HS-170	Preparation for Field Experience in Human Services	3
— —	Gerontology program elective	3

Credits required for certificate 46-47

GERONTOLOGY PROGRAM ELECTIVES

COURSE		CREDITS
COMM-140	Introduction to Intercultural Communication	4
CS-120	Survey of Computing	4
ED-258	Multicultural Education	3
FN-110	Personal Nutrition	3
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	7
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 Gerontology program advisor.

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 addresses 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 allied health care programs (such as Medical Assistant, and Emergency Medical Technology) to have the background and knowledge to work with the aging population.

PROGRAM OUTCOMES

Upon the 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.

For information, contact Yvonne Smith at 503-594-3207 or yvonne@clackamas.edu.

GERONTOLOGY FOR HEALTH CARE PROFESSIONALS CAREER PATHWAY CERTIFICATE

COURSE	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
— — Gerontology for Health Care Professionals program electives	3
<i>Credits required for certificate</i>	15

GERONTOLOGY FOR HEALTH CARE PROFESSIONALS PROGRAM ELECTIVES

COURSE		CREDITS
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

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.

PROGRAM OUTCOMES

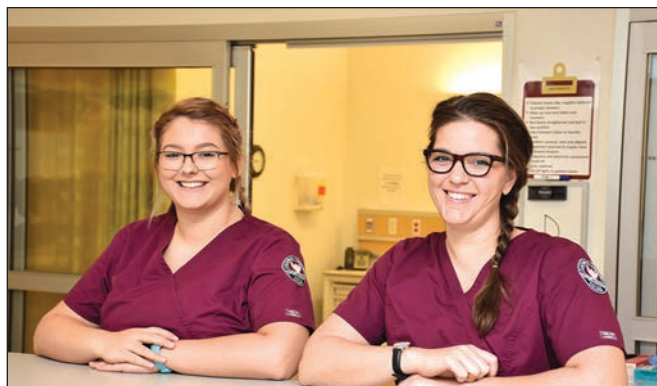
Upon the successful completion of this program, students should be able to:

- 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.

For information, contact Yvonne Smith at 503-594-3207 or yvonne@clackamas.edu.

NURSING ASSISTANT-GERONTOLOGY SPECIALIST CAREER PATHWAY CERTIFICATE

COURSE		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	7
NUR-100C	Nursing Assistant I Clinical	0
<i>Credits required for certificate</i>		19



Horticulture

Certificate Associate of Applied Science Degree

PROGRAM CODES: AAS.HORT1, 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 Associate of Applied Science degree program. Following the course offerings in the order listed will allow for completion in the one or two-year period.

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 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- BA-285 Human Relations in Business or COMM-100 Basic Speech 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

Horticulture AAS Degree

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.

PROGRAM OUTCOMES

Horticulture Certificate Degree

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.

Students completing the Horticulture Associate of Applied Science (AAS) Degree with a 2.5 GPA or higher, are eligible to take the Oregon Landscape Contractors License exam.

CAREERS

Career opportunities include nursery and garden center manager and associate, nursery production, greenhouse grower, organic food production, supply and equipment sales, landscape design, installation and maintenance worker, parks department personnel and groundskeeper, among others.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or april.chastain@clackamas.edu.

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.

OSU TRANSFER COURSES

COURSE		CREDITS
HOR-112	Horticulture Career Exploration	2
HOR-215	Herbaceous Perennials	3
HOR-226	Plant Identification/Fall	4
HOR-228	Plant Identification/Spring	4
HOR-246	Organic Farming and Gardening	2

Note: Many of the horticulture courses will also transfer as Lower Division Collegiate (LDC) credits.

Horticulture continued...

HORTICULTURE CERTIFICATE

FALL TERM		CREDITS
HOR-111	Horticulture Practicum/Fall	2
HOR-115	Horticulture Safety	1
HOR-122	Greenhouse I	
or HOR-224	Landscape Installation	3
HOR-226	Plant Identification/Fall	4
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level math)	4-5
WINTER TERM		
HOR-130	Plant Propagation Theory	
or 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
SPRING TERM		
BA-285	Human Relations in Business	
or COMM-100	Basic Speech Communication	3-4
HOR-112	Horticulture Career Exploration	2
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-142	Greenhouse II	
or HOR-145	Turf Installation & Maintenance	2-3
HOR-143	Horticulture Practicum/Spring	2
HOR-228	Plant Identification/Spring	4
SUMMER TERM		
HOR-280	Horticulture/CWE	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
<i>Credits required for certificate</i>		51-55

HORTICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST 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
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level math)	4-5
WINTER TERM		
HOR-130	Plant Propagation Theory	
or 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
SPRING TERM		
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	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
SUMMER TERM		
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE	
& HOR-282	Horticulture/CWE	6

HORTICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-285	Human Relations in Business	
or COMM-100	Basic Speech Communication	3-4
HOR-122	Greenhouse I	
or HOR-224	Landscape Installation	3
HOR-235	Weed Identification	
or HOR-236	Insect Identification	2
SPN-101	First-Year Spanish I	4
— —	Horticulture program electives	3
WINTER TERM		
BA-101	Introduction to Business	4
BA-119	Project Management Practices	2
HOR-230	Equipment Operation & Maintenance	2
HOR-231	Irrigation Design	3
HOR-237	Disease Identification	2
— —	Horticulture program electives	3
SPRING TERM		
HOR-142	Greenhouse II	
or HOR-145	Turf Installation & Maintenance	2-3
HOR-240	Irrigation Practices	3
— —	Horticulture program electives	8
<i>Credits required for degree</i>		94-98

HORTICULTURE PROGRAM ELECTIVES

COURSE	CREDITS	
BA-223	Principles of Marketing	4
HOR-113	Organic Farming Practicum/Fall	3
HOR-122	Greenhouse I	3
or HOR-224	Landscape Installation	3
HOR-123	Landscape Maintenance	3
HOR-124	Food Harvest	3
HOR-125*	Food Production in the Willamette Valley	3
HOR-126*	Landscape Water Features	1
HOR-127*	Landscape Lighting	1
HOR-128*	Landscape Stones & Pavers	1
HOR-129*	Landscape Decks & Fences	1
HOR-130	Plant Propagation Theory	3
or HOR-131	Tree & Shrub Pruning	3
HOR-135	Propagation of Edible Plants	3
HOR-136	Organic Farming Practicum/Winter	3
HOR-141	Organic Farming Practicum/Spring	4
HOR-142	Greenhouse II	3
or HOR-145	Turf Installation & Maintenance	2
HOR-146	Fruit & Berry Growing	3
HOR-148	Farm Equipment	3
HOR-211	Native Plant Identification	1
HOR-212	Flower Arranger's Garden/Fall	2
HOR-213*	Computer-Aided Landscape Design	3
HOR-215	Herbaceous Perennials	3
HOR-220	Plant Propagation/Fall	3
HOR-225	Arboriculture I	3
HOR-229	Introduction to Landscape Design	3
HOR-232*	Commercial Floral Design	3
HOR-235	Weed Identification	2
or HOR-236	Insect Identification	2
HOR-239	Tree Climber Training	1
HOR-241*	Nursery Management	3
HOR-244*	Environmental Landscape Design	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
HOR-260	Arboriculture II	3
HOR-261	Tree Diagnostics	2

HOR-281	Horticulture/CWE	6
or HOR-280	Horticulture/CWE	3
& HOR-282	Horticulture/CWE	3
WET-109	Backflow Assembly Operation and Testing	4

*Offered alternate years

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 degree program.

Students in this program also take the Backflow Assembly Operation and Testing class, which prepares them to become certified as a Backflow Assembly Tester.

This pathway certificate is a part of the Horticulture AAS degree program. Classes also count toward the Landscape Management AAS.

PROGRAM OUTCOMES

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

- design, install, maintain, troubleshoot, repair and program irrigation systems.

CAREERS

Career opportunities include working as an Irrigation Technician in nurseries, greenhouses, parks, golf courses, landscapes or production agriculture.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or april.chastain@clackamas.edu.

IRRIGATION TECHNICIAN CAREER PATHWAY CERTIFICATE

WINTER TERM		CREDITS
HOR-231	Irrigation Design	3
WET-109	Backflow Assembly Operation and Testing	4
SPRING TERM		
HOR-140	Soils	3
HOR-240	Irrigation Practices	3
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE	
& HOR-282	Horticulture/CWE	6
<i>Credits required for certificate</i>		19

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 degree program. Classes also count toward the Landscape Management AAS and the Arboriculture AAS programs.

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.

CAREERS

Career opportunities include working as a Plant Health Management Technician or Pest Control Specialist in nurseries, greenhouses, parks, golf courses, landscape management, arboriculture, or production agriculture.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or april.chastain@clackamas.edu.

PLANT HEALTH MANAGEMENT CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
WINTER TERM		
HOR-216	Integrated Pest Management	3
HOR-237	Disease Identification	2
SPRING TERM		
HOR-120	Pesticide Laws & Safety	1
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE	
& HOR-282	Horticulture/CWE	6
<i>Credits required for certificate</i>		16



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. The Human Resource Certification 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 HR.

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-121 English Composition)

- 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.

CAREERS

Career opportunities include human resource manager, human resource generalist, human resource specialist, human resource assistant, and information and records clerk.

For information call Michael Moiso, 503-594-3770 or mmoiso@clackamas.edu.

HUMAN RESOURCE MANAGEMENT CERTIFICATE

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104	Business Math	
	or MTH-065 Algebra II	3-4
BA-131	Introduction to Business Computing	4
WR-121	English Composition	4
WINTER TERM		
BA-208	Employee and Labor Relations	4
BA-224	Human Resource Management	4
BA-250	Small Business Management	3
BA-285	Human Relations in Business	4
SPRING TERM		
BA-226	Business Law I	4
BA-229	Employment Law	4
BA-254	Basic Compensation & Benefits	4
— —	Human Resource Management program electives	3
<i>Credits required for certificate</i>		45-47

Courses in this program can be applied to satisfy requirements in the Business AAS degree.

HUMAN RESOURCE MANAGEMENT PROGRAM ELECTIVES

Any Business Administration (BA) or Business Technology (BT) course not included in the Human Resource Management program.

Human Resource Management Essentials

Career Pathway Certificate

PROGRAM CODE: CC.HRMESSENTIALS

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.

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.

CAREERS

Careers includes human resource specialists, human resource generalists, and human resource assistants.

For information call Michael Moiso, 503-594-3770 or mmoiso@clackamas.edu.

**HUMAN RESOURCE MANAGEMENT ESSENTIALS
CAREER PATHWAY CERTIFICATE**

COURSE		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
<i>Credits required for certificate</i>		<i>16</i>

Courses in this program can be applied to satisfy requirements in the Human Resource Management certificate.

Human Services Generalist

Certificate

Associate of Applied Science Degree

**PROGRAM CODES: AAS.HUMANSERVEN,
CC.HUMANSERVEN**

Both the one-year certificate and the two-year AAS in Human Services Generalist degree offer training for entry-level positions in diverse social services agencies. The degree combines academic course work with 12 credits of 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.

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 Communication Skills: Occupational Writing or WR-121 English Composition)

- 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)

NOT REQUIRED FOR CERTIFICATE

- Use effective life skills to improve and maintain mental and physical wellbeing.

Program Outcomes

Human Services Generalist AAS Degree

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.

PROGRAM OUTCOMES

Human Services Generalist Certificate Degree

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.

CAREERS

Opportunities for employment include positions such as case managers and assistants, resource specialists, family advocates, client advocates, intake workers, family assistance workers and volunteer coordinators.

For information contact Yvonne Smith, 503-594-3207 or yvonne@clackamas.edu.

HUMAN SERVICES GENERALIST CERTIFICATE

FALL TERM		CREDITS
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HS-100	Introduction to Human Services	3
WR-101	Communication Skills: Occupational Writing	3-4
or WR-121	English Composition	
— —	Human Services Generalist program electives	6
WINTER TERM		
HDF-260	Understanding Child Abuse and Neglect	3-4
or GRN-184	Aging & the Individual	
HS-154	Community Resources	3
MTH-050	Technical Mathematics I	4
or MTH-065	Algebra II	
— —	Human Services Generalist program electives	5
SPRING TERM		
HDF-140	Contemporary American Families	3-4
or SOC-210	Marriage, Family, & Intimate Relations	
HE-164	Body & Drugs II: Alcohol	3
or HE-263	Body & Drugs III: Marijuana	
or 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	3
HS-280	Human Services Generalist I: CWE/Practicum	3
<i>Credits required for certificate</i>		<i>45-48</i>

continued

Human Services Generalist continued...

HUMAN SERVICES GENERALIST

ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
HDF-260	Understanding Child Abuse and Neglect	4
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HS-100	Introduction to Human Services	3
WR-101	Communication Skills: Occupational Writing	3-4
or WR-121	English Composition	3-4
— —	Human Services Generalist program electives	3

WINTER TERM

HE-164	Body & Drugs II: Alcohol	
or HE-263	Body & Drugs III: Marijuana	
or HE-264	Body & Drugs IV: Other Drugs, Other Addictions	3
HS-103	Ethics for Human Service Workers	2
HS-154	Community Resources	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	
or MTH-098	College math Foundations	4
— —	Human Services Generalist program electives	3

SPRING TERM

HDF-140	Contemporary American Families	
or SOC-210	Marriage, Family, & Intimate Relations	3-4
HS-156	Conducting Human Service Interviews	3
HS-170	Preparation for Field Experience in Human Services	3
— —	Human Services Generalist program electives	6

HUMAN SERVICES GENERALIST

ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
CJA-214	Intimate Partner Violence	
or CJA-215	Sexual Abuse and Human Trafficking	3
HS-256	Advanced Interviewing Skills with Theory	3
HS-280	Human Services Generalist I: CWE/Practicum	4
— —	Human Services Generalist program electives	4

WINTER TERM

HS-281	Human Services Generalist II: CWE/Practicum	4
PSY-215	Introduction to Developmental Psychology	4
SOC-205	Social Stratification & Social Systems	4
— —	Human Services Generalist program electives	3

SPRING TERM

HS-216	Group Counseling Skills	3
HS-232	Case Management	3
HS-282	Human Services Generalist III: CWE/Practicum	4
— —	Human Services Generalist program electives	5

Credits required for degree 90-92

HUMAN SERVICES GENERALIST PROGRAM ELECTIVES

Students take 24 credits from courses taken for completion from any of the following certificate programs: Gerontology, Gerontology for Health Care Professionals, Nursing Assistant-Gerontology Specialist, Juvenile Corrections, or Early Childhood Education & Family Studies.

Any course numbered 100 or above in the following prefixes as long as the course is not fulfilling another requirement in this degree:

ASL, CJA, COMM, ECE, ED, FR, GER, GRN, HD, HDF, HS, MA, PSY, SOC, SPN, WS or any of the following Health courses:

COURSE		CREDITS
HE-164	Body & Drugs II: Alcohol	3
HE-205	Youth Addictions	3
HE-249	Mental Health	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

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 Addiction Counselor Certification Board. 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. 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

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 abuse field;
- recognize the signs of common substance abuse disorders;
- discuss the impact of drug use and abuse on society and the public health.

CAREERS

This program prepares students to work in a variety of human service settings, including both inpatient and outpatient treatment programs, programs for the homeless, and a variety of community agencies.

For information contact Yvonne Smith, 503-594-3207 or yvannes@clackamas.edu.

ALCOHOL & DRUG COUNSELOR CAREER PATHWAY CERTIFICATE

COURSE		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
HS-216	Group Counseling Skills	3

Credits required for certificate 16

Industrial Maintenance Technology

Certificate

Associate of Applied Science Degree

PROGRAM CODE: AAS.INDMAINTECH, 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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-100- Basic Speech Communication)

- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (3 credits- MFG-107 Industrial Safety & First Aid) NOT REQUIRED FOR CERTIFICATE

- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Industrial Maintenance Technology AAS Degree

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;
- 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.

PROGRAM OUTCOMES

Industrial Maintenance Technology Certificate Degree

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.

CAREERS

IMT graduates find careers as maintenance mechanics, millwrights, process technicians, maintenance machinists, building engineers, robotics technicians and industrial electrician apprentices.

For information contact Mike Mattson, 503-594-3322 or mattsonm@clackamas.edu.

INDUSTRIAL MAINTENANCE TECHNOLOGY CERTIFICATE

FALL TERM		CREDITS
IMT-104	Reading Schematics and Symbols	2
MFG-103	Machining for Fabrication & Maintenance	3
MFG-107	Industrial Safety & First Aid	3
MFG-109	Computer Literacy for Technicians	3
MFG-130	Basic Electricity I	3
MTH-050	Technical Mathematics I	4
WINTER TERM		
COMM-100	Basic Speech Communication	3
EET/IMT-139	Principles of Troubleshooting I	2
IMT-120	Industrial Machinery I	3
MFG-131	Basic Electricity II	3
MFG-140	Principles of Fluid Power	3
MTH-080	Technical Mathematics II	3
SPRING TERM		
IMT-110	Preventative Maintenance	2
MFG-132	Basic Electricity III	3
MFG-221	Materials Science	3
MFG-280	Manufacturing Technology/CWE	2
WR-101	Communication Skills: Occupational Writing	3
— —	Technical elective	3
<i>Credits required for certificate</i>		51

INDUSTRIAL MAINTENANCE TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

*Industrial Maintenance Technology continued...***INDUSTRIAL MAINTENANCE TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FALL TERM		CREDITS
EET/IMT-239	Principles of Troubleshooting II	2
IMT-108	Rigging and Lifting	2
IMT-215	Electromechanical Systems I	2
IMT-220	Industrial Machinery II	3
WLD-150	Welding Processes	4
— —	Technical elective	3
WINTER TERM		
CDT-108A	Introduction to SolidWorks	—
or CDT-103	Computer-Aided Drafting I	3
EET-233	Programmable Logic Controllers I	3
IMT-223	Instrumentation & Controls	3
IMT-225	Electromechanical Systems II	2
MFG-209	Programming & Automation for Manufacturing	3
— —	Technical elective	3
SPRING TERM		
EET-234	Programmable Logic Controllers II	3
MET-170	Introduction to Manufacturing Processes	3
MFG-219	Robotics	3
MFG-280	Manufacturing Technology/CWE	2
— —	Technical elective	3
<i>Credits required for degree</i>		98

INDUSTRIAL MAINTENANCE TECHNOLOGY PROGRAM ELECTIVES

Any course with a CDT, EET, GIS, MET, MFG, SM, or WLD prefix not included in the Industrial Maintenance Technology program or other technical course with approval.

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.

RELATED INSTRUCTION OUTCOMES**Computation (1 course- MTH-050 Technical Mathematics I)**

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-100- Basic Speech 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 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.

CAREERS

IMT graduates find careers as maintenance mechanics, millwrights, process technicians, maintenance machinists, building engineers, robotics technicians and industrial electrician apprentices.

For information contact Mike Mattson, 503-594-3322 or mattsonm@clackamas.edu

**INDUSTRIAL MAINTENANCE TECHNOLOGY MECHANICAL
MAINTENANCE CERTIFICATE: 1ST YEAR**

FALL TERM		CREDITS
IMT-104	Reading Schematics and Symbols	2
IMT-108	Rigging and Lifting	2
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
WINTER TERM		
COMM-100	Basic Speech Communication	3
IMT-120	Industrial Machinery I	3
MFG-140	Principles of Fluid Power	3
MTH-080	Technical Mathematics II	3
WLD-150	Welding Processes	4
SPRING TERM		
IMT-110	Preventative Maintenance	2
MET-170	Introduction to Manufacturing Processes	3
MFG-221	Materials Science	3
MFG-280	Manufacturing Technology/CWE	2
WR-101	Communication Skills: Occupational Writing	3
— —	Technical Elective	3
<i>Credits required for certificate</i>		49

INDUSTRIAL MAINTENANCE TECHNOLOGY PROGRAM ELECTIVES

Any course with a CDT, EET, GIS, MET, MFG, or WLD prefix not included in the Industrial Maintenance Technology program or other technical course with approval.

Landscape Management

Associate of Applied Science Degree

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 Associate of Applied Science (AAS) Degree 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.

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 Communication Skills: Occupational Writing or WR-121 English Composition or BA-214 Business Communications)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- BA-285 Human Relations in Business or COMM-100 Basic Speech 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 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.

CAREERS

As a graduate of our Landscape program, students are prepared to work in a supervisory or skilled landscape technician position for a landscape design/build company, irrigation specialist, estate garden, parks department, arboretum, golf course or as a self-employed designer or installation/maintenance contractor.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or april.chastain@clackamas.edu.

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.

OSU TRANSFER COURSES

COURSE		CREDITS
HOR-112	Horticulture Career Exploration	2
HOR-215	Herbaceous Perennials	3
HOR-226	Plant Identification/Fall	4
HOR-228	Plant Identification/Spring	4
HOR-246	Organic Farming and Gardening	2

Note: Many of the horticulture courses will also transfer as Lower Division Collegiate (LDC) credits.

LANDSCAPE MANAGEMENT

ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST 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
MTH-050	Technical Mathematics I or MTH-065 Algebra II (or higher level of math)	4-5
WINTER TERM		CREDITS
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
HOR-229	Introduction to Landscape Design or HOR-244* Environmental Landscape Design	3

continued

Landscape Management continued...

SPRING TERM

BA-285	Human Relations in Business	
or COMM-100	Basic Speech Communication	3-4
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

SUMMER TERM

HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE	
& HOR-282	Horticulture/CWE	6

LANDSCAPE MANAGEMENT

ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
HOR-123	Landscape Maintenance	3
HOR-224	Landscape Installation	3
HOR-235	Weed Identification	
or HOR-236	Insect Identification	2
SPN-101	First-Year Spanish I	4
—	Landscape Management program electives	3

WINTER TERM

BA-119	Project Management Practices	2
HOR-230	Equipment Operation & Maintenance	2
HOR-231	Irrigation Design	3
HOR-237	Disease Identification	2
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	
or BA-214	Business Communications	3-4

SPRING TERM

BA-101	Introduction to Business	4
Choose two from the following:		
HOR-126*	Landscape Water Features	1
HOR-127*	Landscape Lighting	1
HOR-128*	Landscape Stones & Pavers	1
HOR-129*	Landscape Decks & Fences	1
HOR-145	Turf Installation & Maintenance	2
HOR-215	Herbaceous Perennials	3
HOR-240	Irrigation Practices	3

Credits required for degree 94-97

LANDSCAPE MANAGEMENT PROGRAM ELECTIVES

COURSE		CREDITS
BA-223	Principles of Marketing	4
HOR-126*	Landscape Water Features	1
or HOR-127*	Landscape Lighting	1
or HOR-128*	Landscape Stones & Pavers	1
or HOR-129*	Landscape Decks & Fences	1
HOR-146	Fruit & Berry Growing	3
HOR-211	Native Plant Identification	1
HOR-212	Flower Arranger's Garden/Fall	2
HOR-213*	Computer-Aided Landscape Design	3
HOR-220	Plant Propagation/Fall	3
HOR-225	Arboriculture I	3
HOR-229	Introduction to Landscape Design	3
or HOR-244*	Environmental Landscape Design	3
HOR-239	Tree Climber Training	1
HOR-246	Organic Farming and Gardening	2
HOR-260	Arboriculture II	3
HOR-261	Tree Diagnostics	2
HOR-290	Special Topics in Horticulture	3
WET-109	Backflow Assembly Operation and Testing	4

*Offered alternate years

Landscape Management, Arboriculture Option

Associate of Applied Science Degree

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.

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- BA-214 Business Communications or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- BA-285 Human Relations in Business or COMM-100 Basic Speech 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.

CAREERS

As a student of our program, you can advance your understanding of trees, hone your arboricultural skills, and help promote the science of arboriculture. As a graduate of our Arboriculture program, you will be prepared to work as a plant care technician, climber, or arborist for a municipality, arboretum, or tree care company.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or april.chastain@clackamas.edu.

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.

ARBORICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
HE-252**	First Aid/CPR/AED	3
HOR-115	Horticulture Safety	1
HOR-223	Applied Plant Science	4
HOR-226	Plant Identification/Fall	4
HOR-236	Insect Identification	2

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

SPRING TERM

BA-285	Human Relations in Business	3-4
or COMM-100	Basic Speech Communication	
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-228	Plant Identification/Spring	4
WR-121	English Composition	3-4
or BA-214	Business Communications	

SUMMER TERM

HOR-211	Native Plant Identification	1
HOR-280	Horticulture/CWE (in Arboriculture field)	3

ARBORICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
HOR-123	Landscape Maintenance	3
HOR-225	Arboriculture I	3
HOR-262	Treework Practicum I	2
MTH-050	Technical Mathematics I	4-5
or MTH-065	Algebra II (or higher level of math)	
— —	Arboriculture program electives	3

WINTER TERM

BA-119	Project Management Practices	2
HOR-229	Introduction to Landscape Design	3
or HOR-244*	Environmental Landscape Design	
HOR-237	Disease Identification	2
HOR-260	Arboriculture II	3
— —	Arboriculture program electives	3

SPRING TERM

HOR-215	Herbaceous Perennials	3
HOR-261	Tree Diagnostics	2
HOR-263	Plant Health Care Practicum	2
HOR-282	Horticulture/CWE (in Arboriculture field)	3
— —	Arboriculture program electives	3

SUMMER TERM

HOR-281	Horticulture/CWE (in Arboriculture field)	6
<i>Credits required for degree</i>		94-97

ARBORICULTURE PROGRAM ELECTIVES

COURSE		CREDITS
BA-101	Introduction to Business	4
HOR-145	Turf Installation & Maintenance	2
HOR-146	Fruit & Berry Growing	3
HOR-213*	Computer-Aided Landscape Design	3
HOR-224	Landscape Installation	3
HOR-229	Introduction to Landscape Design	3
or HOR-244*	Environmental Landscape Design	
HOR-231	Irrigation Design	3
HOR-235	Weed Identification	2
HOR-240	Irrigation Practices	3
HOR-264	Treework Practicum II (Aerial)	2
SPN-101	First-Year Spanish I	4

*Currently offered alternate years.

**Course may be waived with current CPR certification

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.

Landscape Practices continued...

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.

CAREERS

As a graduate of our Landscape Practices program, you will be prepared to work in a skilled landscape technician position for a: landscape design/build company, estate garden, parks department, tree care company, golf course or as a self-employed maintenance contractor.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or april.chastain@clackamas.edu.

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.

LANDSCAPE PRACTICES CERTIFICATE

FALL TERM		CREDITS
HOR-115	Horticulture Safety	1
HOR-123	Landscape Maintenance	3
HOR-224	Landscape Installation	3
HOR-226	Plant Identification/Fall	4
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
WINTER TERM		
HOR-131	Tree & Shrub Pruning	3
HOR-216	Integrated Pest Management	3
HOR-229	Introduction to Landscape Design	3
or HOR-244*	Environmental Landscape Design	3
HOR-230	Equipment Operation & Maintenance	2
HOR-237	Disease Identification	2
SPRING TERM		
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-145	Turf Installation & Maintenance	2
HOR-228	Plant Identification/Spring	4
HOR-240	Irrigation Practices	3
SUMMER TERM		
HOR-280	Horticulture/CWE	3
<i>Credits required for certificate</i>		44

*Offered alternate years

Machine Tool Technology

Professional Upgrade Certificate

Associate of Applied Science Degree

PROGRAM CODES: AAS.MACHTECH, 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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits - see page 82 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) NOT REQUIRED FOR CERTIFICATE

- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Machine Tool Technology AAS Degree

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.

PROGRAM OUTCOMES

Machine Tool Technology Certificate Degree

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.

CAREERS

Career opportunities may include machinist, tool maker, CNC programmer/operator and CAD/CAM technicians.

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.

MACHINE TOOL TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
MFG-104	Print Reading	2
MFG-107	Industrial Safety & First Aid	3
MFG-111	Machine Tool Fundamentals I	9
MTH-050*	Technical Mathematics I	4
SECOND TERM		
MFG-105	Dimensional Inspection	2
MFG-109	Computer Literacy for Technicians	
or MFG-209	Programming & Automation for Manufacturing	3
MFG-112	Machine Tool Fundamentals II	9
MTH-080	Technical Mathematics II	3
THIRD TERM		
MFG-106	Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing	3
MFG-201	CNC I: Set-Up and Operation	4
MFG-280	Manufacturing Technology/CWE	2
WR-101*	Communication Skills: Occupational Writing	3
— —	Human Relations requirement (see page 82)	3
<i>Credits required for certificate</i>		50

MACHINE TOOL TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

MACHINE TOOL TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FOURTH TERM		CREDITS
MFG-113	Machine Tool Fundamentals III	9
MFG-204	Computer-Aided Manufacturing I	4
— —	Machine Tool Technology program electives	3
FIFTH TERM		
MFG-202	CNC II: Programming & Operation	4
MFG-205	Computer-Aided Manufacturing II	4
MFG-211	Machine Tool Fundamentals IV	6
SIXTH TERM		
MFG-203	CNC III: Applied Programming & Operation	3
MFG-206	Computer-Aided Manufacturing III	3
MFG-221	Materials Science	3
MFG-280	Manufacturing Technology/CWE	2
— —*	General elective (any course 100 level or above)	3
<i>Credits required for degree</i>		94

MACHINE TOOL TECHNOLOGY PROGRAM ELECTIVES

Complete three or more credits from the following:

COURSE		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
MFG-130	Basic Electricity I	3
MFG-219	Robotics	3
WLD-150	Welding Processes	4
— —	Other technical courses with departmental approval	

*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.

MANUFACTURING ENGINEERING TECHNOLOGY OREGON TECH TRANSFER COURSES

The Industrial Technology Department, in partnership with Oregon Tech, offers a significant number of transferable classes into Oregon Tech's Manufacturing Engineering Technology degree program.

For information contact the Industrial Technology Department, 503-594-3318.



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.

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.

CAREERS

CNC programmer.

For information contact the Industrial Technology Department, 503-594-3318.

MASTERCAM CERTIFICATE

COURSE		CREDITS
MFG-271	Mastercam Mill I	4
MFG-272	Mastercam Mill II	4
MFG-273	Mastercam, Lathe, Mill, Multi-Axis	4
<i>Credits required for certificate</i>		12

CNC Machining Technician

Career Pathway Certificate

PROGRAM CODE: CC.CNCMACHTECH

The CNC Machining Technician program at Clackamas 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 one-year Machine Tool Technology certificate or two-year Machine Tool Technology AAS degree.

This certificate is part of the manufacturing career pathway preparing students for a wide variety of manufacturing careers and opportunities to continue at a four-year institution.

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.

CAREERS

Career opportunities may include entry-level CNC operator, machinist or general manufacturing technician.

For more information, contact the Industrial Technology Department, 503-594-3318.

CNC MACHINING TECHNICIAN CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
MFG-104	Print Reading	2
MFG-107	Industrial Safety & First Aid	3
MFG-111	Machine Tool Fundamentals I	9
MFG-201	CNC I: Set-Up and Operation	4
MTH-050	Technical Mathematics I	4
— —	CNC Machining Technician program elective	2-4
<i>Credits required for certificate</i>		24-26

CNC MACHINING TECHNICIAN PROGRAM ELECTIVES

COURSE		CREDITS
MFG-105	Dimensional Inspection	2
MFG-106	Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing	3
MFG-112	Machine Tool Fundamentals II	3
MFG-202	CNC II: Programming & Operation	4
MFG-204	Computer-Aided Manufacturing I	4
WLD-150	Welding Processes	4

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- BA-104 Business Math)

- 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 (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.

CAREERS

Career opportunities include wholesale and manufacturing sales representative, insurance and financial sales agents and marketing and advertising assistants.

For students interested in an AAS in Business with a concentration in Marketing, include the following courses within your Business AAS electives: BA-156 Business Forecasting, BA-238 Sales, BA-239 Advertising, and BA-261 Consumer Behavior.

For information contact Beverly Forney, 503-594-3115 or beverlyf@clackamas.edu.

MARKETING CERTIFICATE

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-131	Introduction to Business Computing	4
WR-121	English Composition	4
WINTER TERM		
BA-156	Business Forecasting	3
BA-223	Principles of Marketing	4
BA-239	Advertising	4
BA-285	Human Relations in Business	4
SPRING TERM		
BA-205	Business Communications with Technology	4
BA-226	Business Law I	4
BA-238	Sales	4
BA-261	Consumer Behavior	4
<i>Credits required for certificate</i>		46

Courses in this program can be applied to satisfy elective requirements in the Business AAS degree.

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.

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.

For information contact Beverly Forney, 503-594-3115 or beverlyf@clackamas.edu.

INTEGRATED MARKETING & PROMOTION CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BA-223	Principles of Marketing	4
BA-238	Sales	4
BA-239	Advertising	4
BA-261	Consumer Behavior	4
<i>Credits required for certificate</i>		16

Courses in this program can be applied to satisfy requirements in the Marketing certificate.

Medical Assistant

Certificate

PROGRAM CODE: CC.MEDASST

Medical assistants function as an integral member 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

PROGRAM PREREQUISITES & REQUIREMENTS

The application process to this limited entry program is a multi-phase admission process. Phase requirements are explained in detail on the program website. They include prerequisites, requirements and pertinent dates as listed in the current application: <https://www.clackamas.edu/academics/departments-programs/medical-assistant-ccs>. Information is also available at Student Advising Services located on Harmony, Oregon City and the Wilsonville campuses.

The program consists of three successive terms of full-time study with the addition of two prerequisite courses. Applicants are advised that a high level of dexterity, the ability to multitask and “think on your feet,” increased physical and mental stamina, along with a high degree of “attention to detail” are required for the successful completion of the MA program. Successful students are required to complete an administrative and clinical practicum within an ambulatory care setting in the Portland metro area.

Medical Assistant continued...

PRIOR TO APPLICATION THE MA STUDENT CANDIDATE MUST:

Math competency. Coursework equivalent to MTH-065 or higher as shown on college transcripts with a grade C or better; or math placement higher than MTH-065. Placement assessment should be within the last five (5) academic years.

Placement assessments may be completed through the Harmony Campus Testing Center, 503-594-0636, or at the Oregon City campus Testing Center, 503-594-3283.

- Successfully complete MA-110, Medical Terminology and WR-121, English Composition with a letter grade of 'C' or better.
- Please note that prerequisites and/or application requirements may change from year to year. Please check the website listed above for the most accurate information

Students seeking to enter this special admit program must meet additional admission criteria including Oregon statutory mandates for all healthcare students and providers:

- Must not have been convicted of, pled guilty to or currently charged with a felony; and they must pass a Criminal History Background Check. Must also pass Urine Drug Screen to enter the program (CBHC and UDS must be repeated and passed prior to being released for third term externship)
- Provide official documentation that they will be at least 18 years of age prior to beginning their externship experience in Spring term
- Must certify high school diploma or pass the GED exam
- Must be in good standing with any organization that has granted a professional license, certification or registration
- Provide and submit all Oregon Health Authority (OHA) required documents within the specified time frame of the multiphase application process.
 - Criminal history background check
 - Urine drug/alcohol screen
 - American Heart Association
- BLS CPR certification (Basic Life Support CPR)
- Heartsaver 1st Aid certification
 - Health & Physical Form
 - OHA required vaccinations and/or titers and health screens

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-054 Medication Calculations for Medical Assistants)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-121 English Composition (preferred) or WR-101 Communication Skills: Occupational 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.

CAREERS

Career opportunities may include but are not limited to: employment in the ambulatory healthcare facilities, and outpatient surgical centers. Students should be prepared for entry-level employment as a medical assistant.

The Medical Assistant program at Clackamas Community College does not discriminate among applicants as to age, gender affiliation, sexual orientation, color, religion, or national origin.

For more information, contact healthsciences@clackamas.edu.

MEDICAL ASSISTANT CERTIFICATE PREREQUISITE TO ACCEPTANCE

COURSE		CREDITS
MA-110	Medical Terminology	4
WR-121	(preferred) English Composition	
or WR-101	Communication Skills: Occupational Writing	3-4

MEDICAL ASSISTANT CERTIFICATE

FIRST TERM		CREDITS
BI-120	Introduction to Human Anatomy and Physiology	
or BI-101	General Biology; Cellular Biology	
& BI-102	General Biology; Animal Systems	
or BI-231	Human Anatomy & Physiology I	
& BI-232	Human Anatomy & Physiology II	
& BI-233	Human Anatomy & Physiology III	4
MA-112	Medical Office Practices	4
MA-145	Insurance & Health Information Management	5
PSY-101	Human Relations	3
SECOND TERM		
MA-116	Introduction to Medications	4
MA-117	Clinical Lab Procedures I	1
MA-117L	Clinical Lab Procedures I Lab	1
MA-118	Examination Room Techniques	5
MA-118L	Examination Room Techniques Lab	1
MTH-054	Medication Calculations for Medical Assistants	4
THIRD TERM		
(WEEKS 1-5)		
MA-115	Phlebotomy for Medical Assistants	1
MA-115L	Phlebotomy for Medical Assistants Lab	1
MA-121	Clinical Lab Procedures II	1
MA-121L	Clinical Lab Procedures II Lab	1
PSY-215	Introduction to Developmental Psychology	4
(WEEKS 6-11)		
MA-119**	Medical Assistant Practicum	9
<i>Credits required for certificate</i>		49

**To meet graduation requirements in addition to successful completion of courses, the MA student is required to:

- Participate in an unpaid, supervised externship in an ambulatory care setting.
- Perform 20 hours of public health-related community service.
- Register for the Certified Medical Assistant CMA (AAMA) certification exam.

Note: All clinical/practicum courses are Pass/No Pass. All other courses are letter graded and must be passed with a C or better. All related instruction courses may be taken prior to entering the MA program.

Core curriculum is sequential and may not be taken out of order. Core curriculum is intended to be completed over three consecutive terms in one academic year. Core curriculum may not be challenged. For information about American Association of Medical Assistants (AAMA), Certified Medical Assistant exam, direct inquiries to: www.aama-ntl.org or by phone 800-228-2262.

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 health-care 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 Certified Professional Biller (CPB) and Certified Professional Coder (CPC).

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.

CAREERS

Upon successful completion of this program, students should be able to work confidently in medical billing and/or coding.

For information contact Cindy Garner, 503-594-0672 or cindy.garner@clackamas.edu.

MEDICAL BILLING AND CODING CERTIFICATE REQUISITES

The following requisites must be completed prior to the start of the first term. Curriculum requisites and requirements may change yearly. To see requisites or requirements, please review the department website.

COURSE		CREDITS
*BI-120	Introduction to Human Anatomy and Physiology	4
MA-110	Medical Terminology	4
WR-121	English Composition	4

MEDICAL BILLING AND CODING CERTIFICATE

FIRST TERM		CREDITS
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	Algebra I	
	or MTH-098 College Math Foundations	4
SECOND TERM		
BA-131	Introduction to Business Computing	4
MBC-115	Insurance Billing and Reimbursement II	3
MBC-125	ICD-10 Coding I	2
MBC-126	CPT/HCPCS Coding I	4
THIRD TERM		
COMM-218	Interpersonal Communication	4
MBC-140	Billing and Coding Exam Review	1
MBC-225	ICD-10, CPT® and HCPCS Coding II	5
<i>Credits required for degree</i>		37

*Additional option to meet biology requirement: Complete BI-231, BI-232, and BI-233.



Microelectronics Systems Technology

Certificate

Associate of Applied Science Degree

PROGRAM CODES: AAS.MICROSYSTECH, 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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-095 Algebra III)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational 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.

Physical Education/Health/Safety/First Aid (1 course- MFG-107 Industrial Safety & First Aid) NOT REQUIRED FOR CERTIFICATE

- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Microelectronics Systems Technology AAS Degree

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.

PROGRAM OUTCOMES

Microelectronics Systems Technology Certificate Degree

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.

CAREERS

Career opportunities may include fabrication technician, equipment technician and product test technician.

For information contact the Industrial Technology Department, 503-594-3318.

MICROELECTRONICS SYSTEMS TECHNOLOGY CERTIFICATE

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
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*	Communication Skills: Occupational Writing	3
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 (see page 82) (Recommended: PSY-101)	3
<i>Credits required for certificate</i>		47

MICROELECTRONICS SYSTEMS TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

MICROELECTRONICS SYSTEMS TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FOURTH TERM		CREDITS
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
— —	Microelectronics Systems Technology program electives	3

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
SIXTH TERM		
CH-104	Introductory Chemistry	5
EET-250	Linear Circuits	3
SM-229	Vacuum Technology	2
SM-280	Electronics & Microelectronics/CWE	2
— —	Microelectronics Systems Technology program electives	3
<i>Credits required for degree</i>		91

MICROELECTRONICS SYSTEMS TECHNOLOGY PROGRAM ELECTIVES:

Any course with a CDT, EET, MFG, RET, SM, or WLD prefix not already in the Microelectronics Systems Technology program.

RECOMMENDED ELECTIVES:

MFG-219, EET-225, EET-235, CS-140, CDT-103

*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.

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.

Music Performance & Technology

Associate of Applied Science degree

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; and 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, and also with transfer-oriented programs such as CCC's AS Music degree for transfer to music at Portland State University.

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 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-100 Basic Speech Communication)

- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 credit-courses with HE, HPE, or PE prefix)

- 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:

- 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,
- 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).

CAREERS

Career opportunities includes 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.

Music Performance & Technology continued...

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 does not qualify for financial aid.

For more information, contact Kathleen Hollingsworth, 503-594-6299 or kathleen.hollingsworth@clackamas.edu.

**MUSIC PERFORMANCE & TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE: 1ST YEAR**

FALL TERM		CREDITS
MUP-150	Contemporary Music Ensemble	1
*MUP-171-191	Individual Lessons or MUP-171J-191J Individual Lessons/Jazz or MUP-171R-191R Individual Lessons/Rock	2
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

WINTER TERM

MUP-150	Contemporary Music Ensemble	1
*MUP-171-191	Individual Lessons or MUP-171J-191J Individual Lessons/Jazz or MUP-171R-191R Individual Lessons/Rock	2
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

SPRING TERM

MTH-050	Technical Mathematics I or MTH-065 Algebra II or higher	4-5
MUP-150	Contemporary Music Ensemble	1
*MUP-171-191	Individual Lessons or MUP-171J-191J Individual Lessons/Jazz or MUP-171R-191R Individual Lessons/Rock	2
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	1

**MUSIC PERFORMANCE & TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE: 2ND YEAR**

FALL TERM		CREDITS
COMM-100	Basic Speech Communication	4
MUP-150	Contemporary Music Ensemble	1
*MUP-271-291	Individual Lessons or MUP-271J-291J Individual Lessons/Jazz or MUP-271R-291R Individual Lessons/Rock	2
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

WINTER TERM

MUP-150	Contemporary Music Ensemble	1
*MUP-271-291	Individual Lessons or MUP-271J-291J Individual Lessons/Jazz or MUP-271R-291R Individual Lessons/Rock	2
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	Communication Skills: Occupational Writing	1
or WR-121	English Composition	3-4
— —	Music Business Skills elective	3-4

SPRING TERM

MUP-150	Contemporary Music Ensemble	1
*MUP-271-291	Individual Lessons or MUP-271J-291J Individual Lessons/Jazz or MUP-271R-291R Individual Lessons/Rock	1
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
— —	Music Performance & Technology program elective	1-3

Credits required for degree 92-97

*Lessons must be in same instrument discipline, but may be in different styles.

MUSIC BUSINESS SKILLS ELECTIVES

COURSE	CREDITS	
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-111	General Accounting I	4
BA-112	General Accounting II	4
BA-131	Introduction to Business Computing	4
BA-223	Principles of Marketing	4
BA-238	Sales	4
BA-239	Advertising	4
BA-250	Small Business Management	3

MUSIC PERFORMANCE & TECHNOLOGY PROGRAM ELECTIVES

COURSE	CREDITS	
ART-116	Basic Design: Color Theory & Composition	4
ART-161	Photography I	3
ART-162	Photography II	3
ART-261	Photography III	3
ART-225	Computer Graphics I	3
ART-226	Computer Graphics II	3
ART-227	Computer Graphics III	3
ART-262	Digital Photography & Photo-Imaging	3
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-111	General Accounting I	4
BA-112	General Accounting II	4
BA-119	Project Management Practices	2
BA-120	Project Management Fundamentals	4
BA-122	Teamwork	3
BA-124	Negotiation	3
BA-131	Introduction to Business Computing	4
BA-223	Principles of Marketing	4
BA-238	Sales	4
BA-239	Advertising	4
COMM-112	Persuasive Speaking	4
CS-120	Survey of Computing	4
DMC-104	Digital Video Editing	4

DMC-106	Animation & Motion Graphics I	3
DMC-147	Music, Sound & Moviemaking	1
DMC-247	Sound for Media	3
J-134	Photojournalism	4
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-158	Chamber Ensemble	1
MUP-202	Wind Ensemble	2
MUP-204	Pep Band/Combo-Improv	1
MUP-205	Jazz Ensemble	2
MUP-222	Chamber Choir	2
MUP-225	Vocal Jazz Ensemble: Mainstream	2
MUP-241	College Orchestra	1
MUP-258	Chamber Ensemble	1
MUS-103	Music Fundamentals	3
MUS-111	Music Theory I	3
MUS-134	Group Voice: Anyone Can Sing	1
MUS-137	Group Guitar I: Guitar for Dummies	1
MUS-138	Group Guitar II	1
MUS-145	Introduction to Digital Sound, Video & Animation	3
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-211	Music Theory II	3
MUS-230	Music and Media: Sex, Drugs, Rock & Roll	4
MUS-247	Sound for Media	3
PSY-101	Human Relations	3
TA-111	Fundamentals of Technical Theatre	4
TA-112	Fundamentals of Technical Theatre	4
TA-113	Fundamentals of Technical Theatre	4
TA-141	Acting I	4
TA-142	Acting II	4
TA-143	Acting III	4
TA-211	Technical Theatre Study	4
WR-240	Introduction to Creative Writing: Nonfiction	4
WR-241	Introduction to Creative Writing: Fiction	4
WR-242	Creating Writing: Poetry	4

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.

CAREERS

Careers 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 and sound technical development for software companies.

For more information, contact Brian Rose, 503-594-3340 or brianr@clackamas.edu.

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.

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 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- COMM-100 Basic Speech Communication or COMM-126 Introduction to Gender Communication or COMM-140 Introduction to Intercultural Communication or COMM-218 Interpersonal Communication).

- Engage in ethical communication processes that accomplish goals

MUSIC TECHNOLOGY CERTIFICATE

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	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Music Technology program basics	3-4
— —	Music Technology program electives	2-4
WINTER TERM		
COMM-100	Basic Speech Communication	
or COMM-126	Introduction to Gender Communication	
or COMM-140	Introduction to Intercultural Communication	
or COMM-218	Interpersonal Communication	3-4
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level of math)	4-5
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
— —	Music Technology program basics	3-4
— —	Music Technology program electives	2-4

continued

*Music Technology continued...***SPRING TERM**

MUS-109	Introduction to Audio Recording III	3
MUS-144	Introduction to Electronic Music III: Digital Audio	3
MUS-280	Music/CWE	2
— —	Music Technology program basics	3
— —	Music Technology program electives	2

Credits required for certificate 51-54

MUSIC TECHNOLOGY PROGRAM BASICS

Complete nine credits from the following:

COURSE		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: Guitar for Dummies	1
MUS-138	Group Guitar II	1
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4

MUSIC TECHNOLOGY PROGRAM ELECTIVES

Complete six credits from the following:

COURSE		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	1
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: Guitar for Dummies	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

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

Nursing (RN)

Associate of Applied Science Degree

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). OCNE is a coalition of nurse educators and nursing programs across the state. The curriculum in OCNE nursing programs is competency-based and was developed in collaboration with Oregon Health & Science University (OHSU) and other community colleges around the state. The curriculum was created to educate nurses regarding the prevalent health needs of our population: Health Promotion, Chronic Illness Management, Care of the Acutely Ill and End of Life Care. As a part of the consortium, Clackamas Community College nursing program has joined with ten other Oregon community college programs and all campuses of the Oregon Health & Science University (OHSU) in a unique, unified approach to nursing education. In addition, OCNE schools share the same Required Preparatory courses and have comparable application processes for students. For more information on the OCNE curriculum, refer to www.ocne.org

Admission into the nursing program is by special application only. The application is a two-step process. Students must submit an application to the Allied Health Admissions Office 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

A physical examination by a licensed healthcare provider, 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.

RELATED INSTRUCTION OUTCOMES**Computation (1 course- MTH-095 or higher, except for MTH-098)**

- 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 (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, HPE, or PE 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.

The OCNE curriculum is designed as a four-year course of study (for a full-time student) with the first year devoted to pre-admission requirements. The second and third year of designated study will be completed at Clackamas Community College. Upon completion of the CCC nursing program, students will be eligible to receive their Associate of Applied Science degree in nursing and take the national examination (NCLEX-RN) for registered nurse licensure. Graduates of the nursing program at Clackamas Community College should be prepared for entry-level employment as a registered nurse. The student may elect to continue for the fourth year of study in the OCNE curriculum, leading to a Baccalaureate of Science degree with a focus in nursing offered by OHSU.

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.

NURSING APPLICATION REQUIREMENTS

Information regarding the program, the application process and pre-nursing academic advising sessions is available at 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) continued...

NURSING (RN) PREPARATORY REQUIRED COURSES

COURSE		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-121	English Composition	4
WR-122	English Composition	4
— —	Arts & Letters, Social Science, or Natural Science electives	13

- The following courses or their equivalents will meet the eight credit minimum writing requirements:
WR-121, WR-122 and either WR-222 or WR-227 when each course is three credits each
WR-121 and WR-122 when each course is four credits
- Completion of WR-121 and WR-122 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 or higher, 4-5 credits
MTH-095 or higher with a "C" or better.
Note: MTH-098 does not meet the math competency
Placement into MTH-105/111 as determined by CCC placement test dated after 6/15/13. (No credit given)
- Completed MTH-095 can be applied toward the 45 credits of Required Preparatory courses as a science course.
- MTH-095 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.

NURSING (RN) ASSOCIATE OF APPLIED SCIENCE DEGREE:

FIRST TERM		CREDITS
BI-112*	General Biology for Health Sciences	4-5
or	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	1
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

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
— —	Arts & Letters, Social Science or Natural Science electives, if needed	3

SUMMER TERM OPTION

BI-112*	General Biology for Health Sciences	4-5
or	Biology with Genetics	

FOURTH TERM

NRS-222	Nursing in Acute Care II & End of Life	3
NRS-222C	Nursing in Acute Care II & End of Life Clinical	6
— —	Arts & Letters, Social Science or Natural Science electives, if needed	6

FIFTH TERM

NRS-221	Chronic Illness II and End of Life	3
NRS-221C	Chronic Illness II and End of Life Clinical	6
— —	Arts & Letters, Social Science or Natural Science electives, if needed	6

SIXTH TERM

NRS-224	Integrative Practicum	2
NRS-224C	Integrative Practicum Clinical	7
WR-222***	English Composition	4
or WR-227	Technical Report Writing	
— —	Arts & Letters, Social Science or Natural Science electives, if needed	4

Credits required for degree 90-93

*BI-112 meets the Biology with genetics requirement and must be completed prior to start of second year of nursing program.

**Current Basic Life Support (AHA) is required throughout the nursing program and meets PE requirement

***Required only if eight credit writing requirement not previously met.

- Students must achieve C or higher grades in all required courses (including prerequisites/preparatory courses) prior to advancing to the next term.
- 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 used in this area must be at least three credits.
ASL, FR, GER, SPN (other world languages are accepted; languages must be 200 level)
ART, DMC, ENG, HUM, J, MUP, MUS, PHL, R, TA
COMM (courses numbered COMM-126 and above)
WR (except WR-101, 121, 122, or 227)

SOCIAL SCIENCE

Courses used in this area must be at least three credits.
ANT, EC, GEO, HST, PS, PSY, SOC, SSC, WS

NATURAL SCIENCE

Courses used in this area must be at least three credits.
ASC, BI* (except BI-160, 163, BI-165C), CH (except CH-150), CS, ESR, G, GS, MTH (MTH-095 accepted), PH, Z

NURSING

NUR-160, NUR-217, NUR-218

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.
- MTH-243 Statistics I

COURSE WORK FOR A BACCALAUREATE OF SCIENCE DEGREE WITH A FOCUS IN NURSING THROUGH OHSU WILL INCLUDE THE FOLLOWING NURSING CLASSES:

NRS-410	Population Health Practice
NRS-411	Epidemiology
NRS-412	Nursing Leadership in Health Care Delivery Systems
NRS-424*	Integrative Practicum I Capstone I or Minor course work
NRS-425	Integrative Practicum II Capstone II or Minor course work

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.

*NRS-224 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.

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.

COURSE OFFERED—SUMMER, FALL, WINTER, SPRING TERMS

NUR-100	Nursing Assistant I	7 credits
NUR-100C	Nursing Assistant I Clinical	0 credits

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 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-121 to be eligible to apply or an unofficial transcript indicating WRD-098 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.

COURSE OFFERED SUMMER, FALL, WINTER, SPRING TERMS:

NUR-101	Certified Nursing Assistant II	5 credits
NUR-101C	Certified Nursing Assistant II Acute Care Clinical	0 credits

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.

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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits - see page 82 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.

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.

For information contact Student Academic Support Services Department, 503-594-3475, or www.clackamas.edu/advising.

OCCUPATIONAL SKILLS TRAINING CERTIFICATE

PROGRAM REQUIREMENTS

OST-180	Occupational Skills Training/CWE	24
— —	Occupational related courses	15

RELATED INSTRUCTION REQUIREMENTS

MTH-050	Technical Mathematics I	4
WR-101	Communication Skills: Occupational Writing	3
— —	Human Relations requirement (see page 82)	3

Credits required for certificate 49

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.

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 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (1 course- BA-285 Human Relations in Business or COMM-100 Basic Speech 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.

CAREERS

The Organic Farming certificate prepares graduates to operate their own farm or work in the community food system.

Graduates will be qualified to run small-scale farms, work closely with existing farmers, and be advocates of local food systems. Other career opportunities include working and managing community gardens, farmers markets, and school gardens.

For information contact April Chastain, Horticulture Department advisor, 503-594-3055 or april.chastain@clackamas.edu.

ORGANIC FARMING CERTIFICATE

		CREDITS
FALL TERM		
HOR-113	Organic Farming Practicum/Fall	3
HOR-124	Food Harvest	3
HOR-223	Applied Plant Science	4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Organic Farming program electives	2
WINTER TERM		
HOR-135	Propagation of Edible Plants	3
HOR-136	Organic Farming Practicum/Winter	3
HOR-216	Integrated Pest Management	3
HOR-237	Disease Identification	2
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level math)	4-5
SPRING TERM		
HOR-140	Soils	3
HOR-141	Organic Farming Practicum/Spring	4
HOR-148	Farm Equipment	3
— —	Organic Farming program electives	4
SUMMER TERM		
BA-285	Human Relations in Business	
or COMM-100	Basic Speech Communication	3-4
HOR-146	Fruit & Berry Growing	3
HOR-284	Organic Farming - Campus Farm/CWE	3
HOR-285	Organic Farming/CWE	3
<i>Credits required for certificate</i>		56-59

ORGANIC FARMING PROGRAM ELECTIVES

COURSE		CREDITS
BA-101	Introduction to Business	4
BA-223	Principles of Marketing	4
HOR-231	Irrigation Design	3
HOR-235	Weed Identification	2
HOR-236	Insect 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

Professional Truck Driver

Certificate

PROGRAM CODE: CC.TRUCKDRIVER

The Professional Truck Driver program provides the necessary training for employment within the Transportation and Logistics field. Course work covers rules, regulations and practices, practical applications, customer service skills, and Commercial Driver's Licensing (CDL) training provided in conjunction with the IITR truck driving school. This four class series is part of a statewide program designed to put you in the driver's seat of an exciting career.

PROGRAM OUTCOMES

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

- use the necessary skills to take the Commercial Driving License exam and be qualified for employment in the transportation and logistics industry;

- maintain logbooks and other written records as required by the I.C.C. and other agencies, as well as employers;
- operate vehicles of multiple configurations safely on surface streets, highways, and freeways, complying with all regulations and provide excellent customer service throughout the distinct seasonal weather challenges.

CAREERS

Career opportunities include short and long haul trucking, delivery services, public transportation, supply and logistics management, and dispatching.

For information contact Amanda Watson, Admissions/School Director IITR Truck Schools, 503-657-8225 or amandaw@ittr.net

PROFESSIONAL TRUCK DRIVER CERTIFICATE:

COURSE		CREDITS
TTL-101	Introduction to Professional Truck Driving & Logistics	4
TTL-121	Practical Applications in Professional Truck Driving & Logistics	6
TTL-141	Transportation Customer Service Skills	1-3
TTL-180	Transportation & Logistics/CWE	6
<i>Credits required for certificate</i>		17-19

Project Management

Associate of Applied Science Degree

PROGRAM CODE: AAS.PROJECTMNGT

Upon completion of the two-year Project Management Associate of Applied Science (AAS) Degree program, 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.

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-121 English Composition)

- 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-courses with HE, HPE, or PE prefix)

- Use effective life skills to improve and maintain mental and physical wellbeing.

Project Management continued...

PROGRAM OUTCOMES

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

- identify project management’s five process group 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;
- 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;
- 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.

CAREERS

Careers include project and program management, project portfolio management, and project administration. Potential job titles include 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, and project coordinator.

For more information, contact Frank Corona, 503-594-6498, or francisco.corona@clackamas.edu.

**PROJECT MANAGEMENT
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-131	Introduction to Business Computing	4
MTH-065	Algebra II	
or BA-104	Business Math	3-4
WR-121	English Composition	4
WINTER TERM		
BA-120	Project Management Fundamentals	4
BA-226	Business Law I	4
BT-177	Microsoft Project	3
COMM-111	Public Speaking	4
SPRING TERM		
BA-111	General Accounting I	
or BA-211	Financial Accounting I	4
BA-122	Teamwork	3
BA-124	Negotiation	3
BA-217	Budgeting for Managers	3
— —	Project Management program elective	3

**PROJECT MANAGEMENT
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FALL TERM		CREDITS
BA-125	Advanced Project Management Tools	5
BA-205	Business Communications with Technology	4
BA-223	Principles of Marketing	4
BA-285	Human Relations in Business	4
WINTER TERM		
BA-123	Leadership & Motivation	3
BA-126	Project Management: Workshop	3
BA-206	Management Fundamentals	4
CS-135S	Microsoft Excel	3
— —	PE/Health/Safety/First Aid requirement (see page 82)	1
SPRING TERM		
BA-268	Applied Project Demonstration	3
WR-227	Technical Report Writing	4
— —	Project Management program elective	7
<i>Credits required for degree</i>		91-92

PROJECT MANAGEMENT PROGRAM ELECTIVES

Any Business Administration (BA) or Business Technology (BT) course not included in the Project Management program

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 Associate of Applied Science (AAS) Degree.

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.

CAREERS

Career opportunities include career enhancement such as more marketable skills in one’s current employment or job opportunities in a project management training program.

For more information, contact Frank Corona, 503-594-6498, or francisco.corona@clackamas.edu.

PROJECT MANAGEMENT CERTIFICATE

FALL TERM		CREDITS
BA-120	Project Management Fundamentals	4
BA-125	Advanced Project Management Tools	5
WINTER TERM		
BA-123	Leadership & Motivation	3
BA-126	Project Management: Workshop	3
BT-177	Microsoft Project	3
SPRING TERM		
BA-122	Teamwork	3
BA-124	Negotiation	3
<i>Credits required for certificate</i>		24

Project Management Leadership & Communication

Career Pathway Certificate

PROGRAM CODE: CC.PMLEADERCOM

This program is designed for students with prior project management experience who want to build their interpersonal skills, including effective approaches to leadership and motivation, group dynamics, conflict, power, and organizational behavior. This program also provides a solid grounding in effective written and oral communication techniques, including meeting management, presentations, reports and correspondence. Since project managers typically spend over 80 percent of their time interfacing with people—communicating—these skills are critical to successful project management.

PROGRAM OUTCOMES

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

- demonstrate effective interpersonal communications, especially meeting and stakeholder management;
- list and explain key motivational, influence, and conflict management techniques;
- deliver persuasive and informative presentations;
- analyze scenarios to determine appropriate responses to ethical dilemmas;
- demonstrate appropriate written communication—emails, memos, and reports.

For more information, contact Frank Corona, 503-594-6498, or francisco.corona@clackamas.edu.

PROJECT MANAGEMENT LEADERSHIP & COMMUNICATION CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
BA-205	Business Communications with Technology	4
COMM-111	Public Speaking	4
WINTER TERM		
BA-123	Leadership & Motivation	3
BA-285	Human Relations in Business	4
SPRING TERM		
BA-122	Teamwork	3
BA-124	Negotiation	3
<i>Credits required for certificate</i>		21

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.

PROGRAM OUTCOMES

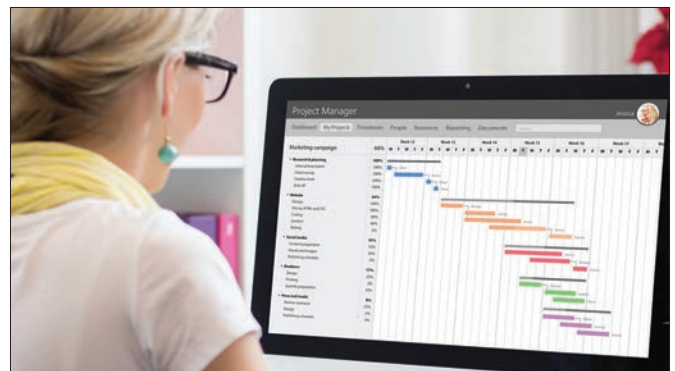
Upon successful completion of this program, students should be able to:

- 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.

For more information, contact Frank Corona, 503-594-6498, or francisco.corona@clackamas.edu.

PROJECT MANAGEMENT TOOLS & TECHNIQUES CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
BA-120	Project Management Fundamentals	4
BA-125	Advanced Project Management Tools	5
WINTER TERM		
BA-126	Project Management: Workshop	3
BT-177	Microsoft Project	3
SPRING TERM		
BA-217	Budgeting for Managers	3
CS-135S	Microsoft Excel	3
<i>Credits required for certificate</i>		21



Renewable Energy Technology

Certificate

Associate of Applied Science Technology

PROGRAM CODES: AAS.RNEWNRGYTECH, 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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits - see page 82 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) NOT REQUIRED FOR CERTIFICATE

- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Renewable Energy Technology AAS Degree

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.

PROGRAM OUTCOMES

Renewable Energy Technology Certificate Degree

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.

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. Additional opportunities exist in the utilities and building trades.

For information contact the Industrial Technology Department at 503-594-3318

RENEWABLE ENERGY TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
MFG-109	Computer Literacy for Technicians	3
MFG-130	Basic Electricity I	3
MTH-050	Technical Mathematics I	4
RET-200	Renewable Energy Systems	4
RET-240	Alternative Fuels	4
SECOND TERM		
EET-139	Principles of Troubleshooting I	2
MFG-107	Industrial Safety & First Aid	3
MFG-131	Basic Electricity II	3
MTH-080	Technical Mathematics II	3
RET-209	Renewable Energy I: Energy Efficiency	3
THIRD TERM		
MET-170	Introduction to Manufacturing Processes	3
MFG-103	Machining for Fabrication & Maintenance	3
RET-211	Renewable Energy II: System Fundamentals	3
RET-280	Renewable Energy/CWE	2
WR-101	Communication Skills: Occupational Writing	3
— —	Human Relations requirement (see page 82)	3
<i>Credits required for certificate</i>		49

RENEWABLE ENERGY TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

**RENEWABLE ENERGY TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

FOURTH TERM		CREDITS
EET-239	Principles of Troubleshooting II	2
GEO-100	Introduction to Physical Geography	
or GEO-110	Cultural & Human Geography	
or GEO-130	Introduction to Environmental Geography	
or GIS-201	Introduction to Geographic Information Systems	3-4
IMT-104	Reading Schematics and Symbols	2
IMT-215	Electromechanical Systems I	2
RET-213	Renewable Energy III: Installation & Maintenance	3
— —	Renewable Energy Technology program elective	3
FIFTH TERM		
IMT-223	Instrumentation & Controls	3
MFG-140	Principles of Fluid Power	3
MFG-209	Programming & Automation for Manufacturing	3
RET-215	Renewable Energy IV: Systems Design	3
— —	Renewable Energy Technology program elective	3
SIXTH TERM		
EET-233	Programmable Logic Controllers I	3
MFG-221	Materials Science	3
RET-217	Renewable Energy Capstone Project	3
RET-280	Renewable Energy/CWE	2
WLD-150	Welding Processes	4
— —	Renewable Energy Technology program elective	3
<i>Credits required for degree</i>		97-98

RENEWABLE ENERGY TECHNOLOGY PROGRAM ELECTIVES

Any course with a CDT, EET, ERM, GIS, MET, MFG, RET, SM or WLD prefix not included in the Renewable Energy Technology program.

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.

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.

CAREERS

Career opportunities include employment in the field of manufacturing, installation and maintenance of renewable energy production.

For information contact the Industrial Technology Department at 503-594-3318.

**ENERGY SYSTEMS MAINTENANCE TECHNICIAN
CAREER PATHWAY CERTIFICATE**

COURSE		CREDITS
EET-139	Principles of Troubleshooting I	2
MFG-104	Print Reading	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	4
— —	Energy Systems Maintenance Technician program electives	6-8
<i>Credits required for certificate</i>		24-26

**ENERGY SYSTEMS MAINTENANCE TECHNICIAN
PROGRAM ELECTIVES**

Select 6-8 elective credits from the following:

COURSE		CREDITS
MET-170	Introduction to Manufacturing Processes	3
MFG-103	Machining for Fabrication & Maintenance	3
RET-209	Renewable Energy I: Energy Efficiency	3
WLD-150	Welding Processes	4
or WLD-102	Introduction to Welding	2

Retail Management

Certificate

PROGRAM CODE: CC.RETAILMGTL1Y

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.

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.

continued

Retail Management continued...

CAREERS

Career opportunities include retail clerks, cashiers, manager trainees, sales associates and other similar positions in all types of retail establishments.

For information contact Beverly Forney, 503-594-3115 or beverlyf@clackamas.edu.

RETAIL MANAGEMENT CERTIFICATE

FALL TERM		CREDITS
BA-131	Introduction to Business Computing	4
BA-206	Management Fundamentals	4
BA-223	Principles of Marketing	4
WINTER TERM		
BA-214	Business Communications	
or BA-205	Business Communications with Technology	3-4
BA-224	Human Resource Management	4
BA-285	Human Relations in Business	4
SPRING TERM		
BA-217	Budgeting for Managers	3
BA-249	Retailing	3
<i>Credits required for certificate</i>		29-30

Note: This certificate is designed to be completed in less than one year.

Most courses in this program can be applied to partially satisfy elective requirements in the Business Management certificate.

Water & Environmental Technology

Professional Upgrade Certificate Associate of Applied Science Degree

PROGRAM CODES: AAS.WATERENVIRONTECH, 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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-082A-E)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)

- 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) NOT REQUIRED FOR CERTIFICATE

- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Water & Environmental Technology AAS Degree

Upon successful completion of this program, students should be able to perform the following AAS program outcomes in addition to the one-year certificate outcomes:

- 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.

PROGRAM OUTCOMES

Water & Environmental Technology Certificate Degree

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.

CAREERS

Career opportunities include water and/or liquid waste treatment plant and system operator, environmental science technician and environmental engineering technician. Careers also include environmental lab technician, source control technician, surface water specialist and environmental regulator.

For information contact Matthew LaForce 503-594-3148 or laforce@clackamas.edu.

WATER & ENVIRONMENTAL TECHNOLOGY CERTIFICATE

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-121	Communication Skills: Occupational Writing or English Composition	3-4
— —	Human Relations requirement (see page 82) (Recommended: PSY-101)	3

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

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

Credits required for certificate 57-58

WATER & ENVIRONMENTAL TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

WATER & ENVIRONMENTAL TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
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

WINTER TERM

HE-252	First Aid/CPR/AED (Course may be waived with current CPR certification)	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

Credits required for degree 90-91

PROFESSIONAL UPGRADE COURSES

The following courses are designed to upgrade professional skills and in some cases assist in preparation for state certification examinations.

COURSE		CEU/CREDITS
WET-010	Wastewater Operations I	3 credits
WET-011	Waterworks Operations I	3 credits
WET-020	Wastewater Operations II	3 credits
WET-021	Waterworks Operations II	3 credits
WET-030	Wastewater Operations III	3 credits
WET-031	Water Treatment	3 credits
XWET-C001	1-Day Cross Connection Specialist Update	(0.6 CEU)
XWET-C002	1-Day Tester Renewal	(0.6 CEU)
XWET-C003	2-Day Tester Retrain/Renewal	(1.2 CEU)
XWET-C004	4-Day Cross Connection Specialist Course	(3.2 CEU)
XWET-C005	5-Day Backflow Tester Course	(4.0 CEU)
XWET-C007	Water Environment School	(2.3 CEU)
XWET-C008	Waterworks School	(2.0 CEU)
XWET-C009	Water Certification Review	(1.6 CEU)

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 and WET-135 may be offered biannually.

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.

CAREERS

Career opportunities include high-purity lab technician and high-purity production technician.

For information contact Matthew LaForce, 503-594-3148 or laforce@clackamas.edu

HIGH PURITY WATER CERTIFICATE

FALL TERM		CREDITS
MTH-082E	Math for High Purity Water	1
WET-125	High Purity Water Production I	3
WET-245	Instrumentation & Control	4

WINTER TERM

WET-135	High Purity Water Production II	4
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SPRING TERM

WET-180	Water & Environmental Projects I	5
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Credits required for certificate 17

Web Design & Development

Associate of Applied Science Degree

PROGRAM CODE: AAS.WEBDESIGNDEV

The Web Design & Development program prepares students for technical positions related to web programming and design. This multidisciplinary program incorporates classes from computer science, art, English, and business. Course work includes computer graphics and design, web development with a focus on current industry standards, web server administration, data-driven web programming, digital media and animation, and technical writing. Cooperative Work Experience (CWE) is supervised real-world employment that supplements the academic classroom environment.

PROGRAM REQUIREMENTS

Prerequisites for first term classes include completing course work for CS-120 Survey of Computing or placement in CS-121 Computer Applications, WRD-098 Introductory Reading & Writing 2: College Preparation or placement in WR-121 English Composition, and MTH-060 Algebra I or placement in MTH-065 Algebra II. This is an open program. Students may take any class in the program for which they have completed the prerequisite.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-065 Algebra II or higher)

- 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 (3-4 credits- See page 82 for course list)

- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 credit- courses with HE, HPE, or PE prefix)

- 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 all the program learning outcomes of the Web Design Certificate;
- create sophisticated custom logos, graphics, and animations for a wide variety of client applications;
- describe the significance of relational databases to web development and apply these database concepts along with server-side scripting technologies towards the creation of data-driven web applications;
- interview and communicate with clients to create web applications that match client vision, personality, and needs;
- describe and complete the steps to begin a consulting business, including initial market research, marketing plans, and budgeting;
- exhibit good teamwork skills and serve as effective members of project teams.

CAREERS

Career opportunities may include web designer/consultant, webmaster, web programmer, web systems specialist, and graphic designer.

OREGON TECH TRANSFER COURSES

The Business Department, 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 Debra Carino, 503-594-3170 or dcarino@clackamas.edu.

WEB DESIGN & DEVELOPMENT

ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
ART-225	Computer Graphics I	3
CS-125H	HTML & Web Site Design	3
CS-140	Introduction to Operating Systems	4
CS-160	Computer Science Orientation	4

WINTER TERM

CS-133S	Introduction to JavaScript & Server-Side Scripting	3
CS-151	Networking I	
or CS-275	Database Design	3-4
CS-181	CMS Web Development	3
CS-195	Flash Web Development	3

SPRING TERM

CS-135I	Advanced Web Design with Dreamweaver	3
CS-234J	jQuery Web Development	3
CS-234P	PHP/MySQL Web Development	3
CS-240L	Linux Administration I	4

SUMMER TERM

CS-280	Computer Science/CWE	3
MTH-065	Algebra II or higher level of math	4-5
WR-121	English Composition	4
— —	Human Relations requirement (see page 82)	3-4

WEB DESIGN & DEVELOPMENT

ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
ART-226	Computer Graphics II	3
CS-135DB	Microsoft Access	3
CS-280	Computer Science/CWE	3
WR-122	English Composition	4

WINTER TERM

CS-151	Networking I	
or CS-275	Database Design	3-4
CS-240W	Windows Desktop Administration	3
CS-280	Computer Science/CWE	3
WR-227	Technical Report Writing	4
— —	PE/Health/Safety/First Aid requirement (see page 82)	1

SPRING TERM

ART-227	Computer Graphics III	3
BA-103	Business Strategies for Computer Consultants	3
CS-289	Web Server Administration	4
CS-297W	Website Capstone	3
DMC-221	Introduction to 2D Animation: Design & Techniques	3

Credits required for degree

97-99

Web Design

Certificate

PROGRAM CODE: CC.WEBDESIGN2

The Web Design program should prepare students for technical positions related to web and graphic design. This multidisciplinary program incorporates classes from computer science and art. Course work includes a strong emphasis on computer graphics and design, data communications theory, operating systems, and web design with a focus on current industry standards. Cooperative Work Experience (CWE) is supervised real-world experience that supplements the academic classroom environment.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-065 Algebra II or higher)

- 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 (3-4 credits- See page 82 for course list)

- Engage in ethical communication processes that accomplish goals.

PROGRAM REQUIREMENTS

The Web Design program prepares students for technical positions related to web and graphic design. This multidisciplinary program incorporates classes from computer science, English, and art. Course work includes a strong emphasis on computer graphics and design, data communications theory, operating systems, and web design with a focus on current industry standards. Cooperative Work Experience (CWE) is supervised real-world employment that supplements the academic classroom environment.

PROGRAM OUTCOMES

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

- apply knowledge of current graphic design software to capture or create images for use in client websites;
- use HTML, CSS, JavaScript, and current web editing technologies, to create standards-complaint, professional websites;
- leverage existing component tools to create e-commerce applications that solve real-world problems,
- perform client needs analyses to create web applications that solve real-world problems;
- articulate and justify technical solutions to an audience through oral, written, and graphical communication;
- 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.

CAREERS

Career opportunities include web designer, web production staff, and graphic designer.

For information contact Debra Carino, 503-594-3170 or dcarino@clackamas.edu.

WEB DESIGN CERTIFICATE

FALL TERM		CREDITS
ART-225	Computer Graphics I	3
CS-125H	HTML & Web Site Design	3
CS-140	Introduction to Operating Systems	4
CS-160	Computer Science Orientation	4
WINTER TERM		
CS-133S	Introduction to JavaScript & Server-Side Scripting	3
CS-151	Networking I	
or CS-275	Database Design	3-4
CS-181	CMS Web Development	3
CS-195	Flash Web Development	3
SPRING TERM		
ART-226	Computer Graphics II	
or CS-240L	Linux Administration I	3-4
CS-135I	Advanced Web Design with Dreamweaver	3
CS-234J	jQuery Web Development	3
CS-234P	PHP/MySQL Web Development	3
SUMMER TERM		
CS-280	Computer Science/CWE	3
MTH-065	Algebra II or higher level math	4-5
WR-121	English Composition	4
— —	Human Relations requirement (see page 82)	3-4
<i>Credits required for certificate</i>		52-56

Welding Technology

Professional Upgrade Certificate

Associate of Applied Science Degree

PROGRAM CODES: AAS.WELDINGTECH, 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;

continued

Welding Technology continued...

- 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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Mathematics I)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3 credits- see page 82 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) NOT REQUIRED FOR CERTIFICATE

- Use effective life skills to improve and maintain mental and physical wellbeing.

PROGRAM OUTCOMES

Welding Technology AAS Degree

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 all welding processes;
- pass AWS D 1.1/D 1.1M structural steel welding certification tests;
- recognize and be able to repair common welding defects according to AWS and industry standards.

PROGRAM OUTCOMES

Welding Technology Certificate Degree

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.

CAREERS

Career opportunities include welding, fabrication, construction, production welding, CNC cutting machine operation and sheet metal fabrication.

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 Welding and Automotive Department, 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 Dustin Bates, 503-594-3973, dustinb@clackamas.edu, or the Automotive and Welding Department, 503-594-3047

WELDING TECHNOLOGY CERTIFICATE

FIRST TERM	CREDITS
MFG-107 Industrial Safety & First Aid	3
MTH-050* Technical Mathematics I	4
WLD-100 Welder's Print Reading I	3
WLD-111 Shielded Metal Arc Welding (Stick) or WLD-111A and WLD-111B Shielded Metal Arc Welding (Stick)	8
SECOND TERM	
MFG-103 Machining for Fabrication & Maintenance	3
MFG-109 Computer Literacy for Technicians	3
WLD-113 Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed) or WLD-113A and WLD-113B Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)	8
WR-101* Communication Skills: Occupational Writing	3
THIRD TERM	
WLD-110 Welder Certification	4
WLD-115 Gas Tungsten Arc Welding (GTAW) or WLD-115A and WLD-115B Gas Tungsten Arc Welding (GTAW)	8
WLD-280 Welding Technology/CWE	2
— — Human Relations requirement (see page 82)	3
<i>Credits required for certificate</i>	52

**WELDING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE:
1ST YEAR**

Complete certificate program.

**WELDING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE:
2ND YEAR**

FOURTH TERM	CREDITS
MFG-221 Materials Science	3
WLD-211 Advanced Shielded Metal Arc Welding	4
WLD-250 Welding Fabrication I Beginning Project	4
— —* General electives (any college level course)	3
— — Welding Technology program elective	3
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
SIXTH TERM	
WLD-215 Advanced Gas Tungsten Arc Welding	4
WLD-252 Welding Fabrication III Advanced Project	4
WLD-280 Welding Technology/CWE	2
— — Welding Technology program elective	4
<i>Credits required for degree</i>	98

*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.

WELDING TECHNOLOGY PROGRAM ELECTIVES

Any course with a WLD or MFG prefix not included in the Welding Technology program, or other technical course with approval.

Entry Level Welding Technician

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.

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.

CAREERS

Career opportunities include entry level jobs in cutting parts, blueprint reading and fitting, tacking, production welding, repair welding and fabrication.

For information contact Dustin Bates, 503-594-3973, dustinb@clackamas.edu, or the Automotive and Welding Department, 503-594-3047

**ENTRY LEVEL WELDING TECHNICIAN
CAREER PATHWAY CERTIFICATE**

COURSE	CREDITS
MFG-107 Industrial Safety & First Aid	3
WLD-100 Welder's Print Reading I	3
WLD-250 Welding Fabrication I Beginning Project	4
— — Entry Level Welding Technician program electives	11-12
<i>Credits required for certificate</i>	21-22

ENTRY LEVEL WELDING TECHNICIAN PROGRAM ELECTIVES

COURSE	CREDITS
MFG-103 Machining for Fabrication & Maintenance	3
WLD-110 Welder Certification	1 or 4
WLD-111 Shielded Metal Arc Welding (Stick)	4 or 8
WLD-113 Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)	4 or 8
WLD-115 Gas Tungsten Arc Welding (GTAW)	4 or 8



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.

RELATED INSTRUCTION OUTCOMES

Computation (1 course- MTH-050 Technical Math I or MTH-065 Algebra II)

- Use appropriate mathematics to solve problems.

Communication (1 course- WR-101 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3-4 credits- See page 82 for list)

- Engage in ethical communication processes that accomplish goals.

PROGRAM OUTCOMES

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

- demonstrate the basic knowledge of wildland fire behavior;
- recognize situations where safety may be at risk and take appropriate actions to insure personal safety;
- apply the fundamental skills necessary to work as a wildland firefighter at the Firefighter 2 level, working as a member of a hand crew or engine crew;
- demonstrate an understanding of basic forest management.

CAREERS

The certificate can lead to careers as a wildland firefighter, forest and conservation technician, forest fire inspector or investigator, forest fire prevention specialist, independent firefighting contractor or employment in the timber industry.

For information contact Jeff Ennenga, 503-594-3539 or jeff.ennenga@clackamas.edu or visit www.clackamas.edu/fire-science

WILDLAND FIRE SCIENCE CERTIFICATE

FIRST 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/L-180)	2
FRP-243	Wilderness I: Psychology of Survival	3
GIS-101	Principles of Geospatial Technology	2
WR-121	English Composition	
or WR-101	Communication Skills: Occupational Writing	3-4
SECOND 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	Technical Mathematics I	
or MTH-065	Algebra II	4
— —	Wildland Fire Science program electives	2-3
THIRD TERM		
BI-103	General Biology; Plants & the Ecosystem	4
BI-103L	General Biology; Plants & The Ecosystem Lab	0
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 (see page 82)	3-4
<i>Credits required for certificate</i>		45-48

WILDLAND FIRE SCIENCE PROGRAM ELECTIVES

Any EMT, FRP, GEO, GIS, or UAS course not included in the Wildland Fire Science program.

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.

PROGRAM OUTCOMES

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

- demonstrate appropriate search and rescue methods including evacuation techniques,
- demonstrate first aid and CPR skills used in the field,
- discuss the basics of land navigation and Northwest weather prediction,
- articulate the knowledge areas required for an understanding of wilderness preparedness.

CAREERS

This program prepares students for employment in parks and recreation, guide services, search and rescue, state and federal agencies, private organizations, forestry jobs and 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.

For information contact Jeff Ennenga, 503-594-3539 or jeff.ennenga@clackamas.edu, or visit www.clackamas.edu/fire-science.

WILDERNESS SURVIVAL AND LEADERSHIP CAREER PATHWAY CERTIFICATE

COURSE		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
<i>Credits required for degree</i>		15

Note: Courses do not need to be taken in sequence

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.

PROGRAM OUTCOMES

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

- summarize use of Silviculture and regeneration practices;
- demonstrate how to identify trees and shrubs commonly found in Oregon;
- discuss the basics of forest road development;
- demonstrate the basics of forest measurement tools;
- explain the basics of marketing timber;
- identify logging systems;
- cite Oregon forest harvest laws.

For information contact Jeff Ennenga, 503-594-3539 or jeff.ennenga@clackamas.edu or visit www.clackamas.edu/fire-science.

WILDLAND FIRE FORESTRY CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BI-103	General Biology; Plants & The Ecosystem	4
BI-103L	General Biology; Plants & The Ecosystem Lab	0
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
<i>Credits required for certificate</i>		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.

PROGRAM OUTCOMES

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

- demonstrate the ability to function as a Wildland Fire-fighter at the Firefighter 2 level;
- recognize situations and take corrective actions when personal safety may be at risk;
- apply the basic skills to operate portable pumps, read and understand fire maps, compass and GPS.

For information contact Jeff Ennenga, 503-594-3539 or jeff.ennenga@clackamas.edu or visit www.clackamas.edu/fire-science.

WILDLAND FIREFIGHTER 1 CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
FRP-130	Introduction to Wildland Firefighting (S-130/S-190/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
<i>Credits required for certificate</i>		14

Wildland Fire Management

Associate of Applied Science

PROGRAM CODE: AAS.WLDLNDMGMT

The Wildland Fire Science 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.

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 Communication Skills: Occupational Writing or WR-121 English Composition)

- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations (3-4 credits- See page 82 for course list)

- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid (1 courses - 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.

CAREERS

Wildland fire fighter, Hot Shots, firefighting managers or supervisors, prevention workers, forest fire inspectors, forest worker.

For information contact Jeff Ennenga, 503-594-3539 or jeff.ennenga@clackamas.edu.

WILDLAND FIRE MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST 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/L-180)	2
FRP-243	Wilderness I: Psychology of Survival	3
GIS-101	Principles of Geospatial Technology	2
WR-101 or WR-121	Communication Skills: Occupational Writing English Composition	3-4
— —	Wildland Fire Management program electives	1

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 Algebra II	4
— —	Wildland Fire Management program electives	2-3

SPRING TERM

BI-103	General Biology; Plants & the Ecosystem	4
BI-103L	General Biology; Plants & The Ecosystem Lab	0
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 requirements (see page 82)	3-4

WILDLAND FIRE MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM CREDITS

FRP-200	Basic Incident Command System (I-100, I-200, IS-700, IS-800)	4
FRP-275	Wildland Fire Management 1	4
GIS-201	Geographic Information Systems	3
— —	Wildland Fire Management program electives	4

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
— —	GIS Electives	3
— —	Wildland Fire Management Program Electives	3

SPRING TERM

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	2-3
— —	Wildland Fire Management Program Electives	7
<i>Credits required for degree</i>		90-93

WILDLAND FIRE MANAGEMENT PROGRAM ELECTIVES

Any EMT, FRP, GEO, GIS, or UAS course not included in the Wildland Fire Management program.

Course Descriptions

www.clackamas.edu



Education That Works



Elective Course List for AAOT, ASOT- Business, and ASOT-Computer Science

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.

AB	Auto Body/Collision Repair	HS	Human Services <i>Except HS-232</i>
ABR	Auto Body/Collision Refinish	IMT	Industrial Maintenance Technology
AM	Auto Service	MA	Medical Assistant
APR	Apprenticeship	MBC	Medical Billing and Coding
BT	Business Technology	MET	Manufacturing Engineering Technology
CDT	Drafting	MFG	Manufacturing
CLA	Clinical Lab Assistant	MUS	Music <i>Only MUS-090, 140, 141, 171, 207, 218, 219, 220, 242, 247</i>
CS	Computer Science <i>Only CS-152, 227, 240M, 240W, 284, 288W, 289</i>	NRS	Nursing
CWE	Cooperative Work Experience	NUR	Nursing
DA	Dental Assisting	OST	Occupational Skills Training
DMC	Digital Media Communications <i>Except DMC-147, 194, 195, 199, 230, 280</i>	PS	Political Science <i>Only PS-280</i>
ECE	Early Childhood Education <i>Except ECE-291, 292</i>	RET	Renewable Energy Technology
ED	Education <i>Only ED-299</i>	SAR	Search and Rescue
EET	Electronic Systems Technology	SBM	Small Business Management
EMP	Emergency Management Professional	SDP	Supervisory Training
EMT	Emergency Medical Technology	SM	Microelectronics Systems Technology
ESH	Environmental Safety & Health	SOC	Sociology <i>Only SOC-280</i>
FRP	Fire Science (Wildland)	TTL	Transportation & Logistics
FST	Fire Science Technology	UAS	Uncrewed Aircraft Systems
GBC	Green Building Construction	UG	Utility Generation
GIS	Geographic Information Systems	UT	Utility Training
GRN	Gerontology	UTL	Utility Training-Line
HDF	Human Development/Family Services	WET	Water-Environmental Technology
HE	Health <i>Only HE-101, 103</i>	WLD	Welding Technology
HOR	Horticulture/Arboriculture/Landscape/Organic Farming	WR	Writing <i>Only WR-128</i>
HPD	Health Professional Development		

Elective Course List for AAOT, ASOT- Business, and ASOT-Computer Science Degrees

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.

ANT	Anthropology	HE	Health <i>Except HE-101, 103</i>
ART	Art	HPE	Health/Physical Education
ASC	Arts & Sciences	HS	Human Services <i>Only HS-232</i>
ASL	American Sign Language	HST	History
BA	Business Administration	HUM	Humanities
BI	Biology	J	Journalism
CH	Chemistry	LIB	Library
CJA	Criminal Justice	MTH	Mathematics
COMM	Communication Studies	MUP	Music Performance
CS	Computer Science <i>Except CS-152, 227, 240M, 240W, 284, 288W, 289</i>	MUS	Music <i>Except MUS-171, 207, 218, 219, 220, 242, 247</i>
DMC	Digital Media Communications <i>Only DMC-147, 194, 195, 199, 230, 280</i>	PE	Physical Education
EC	Economics	PH	Physics
ECE	Early Childhood Education <i>Only ECE-291, 292</i>	PHL	Philosophy
ED	Education <i>Except ED-299</i>	PS	Political Science <i>Except PS-280</i>
EFA	Educational Focus Area	PSY	Psychology
EL	Study Skills	R	Religion
ENG	English	RD	Reading
ENGR	Engineering	SOC	Sociology <i>Except SOC-280</i>
ESR	Environmental Science	SPN	Spanish
FN	Food & Nutrition	SSC	Social Science
FR	French	TA	Theatre Arts
FYE	First Year Experience	WR	Writing <i>Except WR-128</i>
G	Geology	WS	Women's Studies
GEO	Geography	Z	Zoology
GER	German		
GS	General Science		
HD	Human Development/Career Planning		

Course Descriptions

Adult Basic Education (ABE)	163	History	219
Adult Secondary Education	169	Horticulture/Arboriculture/Landscape/Organic Farming	214
American Sign Language	172	Human Development/Career Planning	211
Anthropology	165	Human Development/Family Services	213
Art	166	Human Services	218
Arts & Sciences	169	Humanities	220
Auto Body/Collision Refinishing	163	Industrial Maintenance Technology	221
Auto Body/Collision Repair	163	Journalism	221
Automotive Service Technology	164	Library	222
Biology	175	Manufacturing Engineering Technology	225
Business Administration	172	Manufacturing Technology	225
Business Technology	177	Mathematics	227
Chemistry	179	Medical Assistant	222
Clinical Laboratory Assistant/Phlebotomy	181	Medical Billing and Coding	224
Communication Studies	183	Microelectronics Systems Technology	249
Computer Science	183	Music	235
Computer-Aided Drafting Technology	178	Music Performance	230
Cooperative Work Experience	187	Nursing	239
Criminal Justice	179	Occupational Skills Training	242
Dental Assistant	187	Philosophy	243
Digital Media Communications	189	Physical Education	242
Early Childhood Education	191	Physics	242
Economics	191	Political Science	245
Education	193	Program for Intensive English	243
Educational Focus Area	195	Psychology	245
Electronic Systems Technology	194	Religion	246
Emergency Management Professional	195	Renewable Energy Technology	246
Emergency Medical Technology	197	Search and Rescue	247
Engineering	200	Small Business Management	248
English as a Second Language	201	Social Science	250
English Literature	197	Sociology	249
Environmental Safety & Health	201	Spanish	250
Environmental Science	203	Study Skills	195
Fire Science (Wildland)	204	Theatre Arts	251
Fire Science Technology	207	Transportation & Logistics	252
First Year Experience (FYE)	207	Uncrewed Aircraft Systems	253
Food & Nutrition	203	Water & Environmental Technology	253
French	203	Welding Technology	255
General Education Development	208	Women's Studies	259
General Science	211	Workshop: Citizen Preparation	259
Geographic Information Systems	209	Workshop: Manufacturing	259
Geography	209	Workshop: Theatre Arts	259
Geology	208	Workshop: Water & Environmental Technology	259
German	209	Workshop: Welding	260
Gerontology	211	Writing	257
Health	213	Writing-Reading Skills	258
Health & Fitness	218	Zoology	260

AB**Auto Body/Collision Repair****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-106 Basic Metalforming

2 credits, Not Offered Every Term
Instruction in basic metalforming techniques used in the fabrication of replacement or modified parts used in the construction of automobiles, motorcycles, aircraft, and metal sculpture. Includes shop safety.

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 (ST-RSW), 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.

ABE**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 ESL 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 ESL, ABE, or GED classes. Required: Student Petition.

ABR**Auto Body/Collision Refinishing****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 water-borne 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 water-borne 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-152 Custom Painting Fundamentals

2 credits, Spring

Custom color application and special effects. Covers personal protection, shop safety, environmental concerns, product choice and compatibility, selection and use of masking materials, and color harmony.

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.

AM**Automotive Service Technology****AM-100 Automotive Fundamentals**

3 credits, Fall/Winter/Spring/Summer

An introductory automotive service class intended to provide fundamental knowledge and basic experience about automobiles. Covers automotive systems, preventive maintenance and performing basic repairs. Also provides skill and knowledge for purchasing cars, choosing quality mechanics, and making good economic decisions about repairs and costs. Intended generally to enhance the overall satisfaction of being an automotive consumer and car owner.

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-118 Small Engine Repair

3 credits, Fall/Winter/Spring/Summer

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-121 General Auto Repair I

3 credits, Fall/Winter/Spring

In this course students will experience working in an auto shop/lab as they repair customer vehicles. They will apply concepts such as shop and personal safety, tools and their usage, and customer service as they develop workplace employability skills and work habits. Recommended: 1st term students seeking the AAS degree in Automotive Service Technology should meet with instructor prior to the beginning of the term.

AM-122 General Auto Repair II

3 credits, Fall/Winter/Spring

Course material is coordinated with other auto courses. Includes live repair work and fundamentals such as safety, tools, measuring, and fasteners. For second term automotive students. Prerequisites: AM-121.

AM-129 Electrical Systems

7 credits, Fall

This course covers general electrical system diagnosis; battery diagnosis and service; starting system diagnosis and repair; charging system diagnosis and repair; lighting systems diagnosis and repair. Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090.

AM-130 Brake Systems

7 credits, Fall

Theory and lab course covers basic hydraulics, brake fluids, friction materials, seals, disc and drum brakes, disc and drum brake servicing equipment, hydraulic and vacuum brake boosters and anti-lock brake systems. Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090.

AM-131 Chassis Systems

7 credits, Winter

A theory and lab course covering the design, construction, service, and repair of front and rear suspension systems, wheels and tires, steering systems, and alignments. Prerequisites: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090.

AM-133 Engine Systems

7 credits, Spring

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. Recommended: MTH-020 or placement in MTH-050, WRD-080 or placement in WRD-090.

AM-175 Advanced Mechanic Studies I

3 credits, Fall/Winter/Spring

Lab course for currently enrolled automotive students wishing to specialize in specific areas of automotive repair. Required: Student Petition. Required: Second year Automotive Service Degree student or be previously enrolled in the Automotive Program. Prerequisites: AM-129, AM-130, AM-131, AM-133, AM-224, AM-235, AM-243, AM-244, and AM-245. Recommended: Work independently with minimal help.

AM-185 Advanced Mechanic Studies II

3 credits, Fall/Winter/Spring

Lab course for currently enrolled automotive students wishing to specialize in specific areas of automotive repair. Required: Student Petition. Prerequisites: AM-129, AM-130, AM-131, AM-133, AM-224, AM-235, AM-243, AM-244, and AM-245.

AM-195 Advanced Mechanic Studies III

3 credits, Fall/Winter/Spring

Lab course for currently enrolled automotive students wishing to specialize in specific areas of automotive repair. Required: Student Petition. Prerequisites: AM-129, AM-130, AM-131, AM-133, AM-224, AM-235, AM-243, AM-244, and AM-245.

AM-223 Hybrid Service Technology

3 credits, Fall/Winter/Spring

Provides students with knowledge of theory and physical description of hybrid vehicles. The student will have the opportunity to acquire practical experience in the area of diagnosing and repairing hybrid vehicles. Prerequisites: AM-244.

AM-224 Comfort Systems

4 credits, Spring

This course covers 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: MTH-020 or placement in MTH-050, and WRD-080 or placement in WRD-090.

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-235 Power Transmission Systems

7 credits, Spring

Covers construction, operation, service and repair of clutches, manual transmission, U-joints, drive lines, final drives, overdrive, and four wheel drives.

AM-243 Fuel & Emission Control Systems

7 credits, Winter

Covers service of fuel storage and delivery systems: fuel injection, emission controls, and other electronic engine controls. Includes DSO use and exhaust gas analysis. Prerequisites: AM-129 with a C or better.

AM-244 Advanced Electrical Systems

7 credits, Winter

This course includes electronic and computer fundamentals, general electrical system diagnosis, instrument cluster and driver information systems diagnosis and repair, body electrical systems diagnosis and repair. Prerequisites: AM-129 with a C or better.

AM-245 Automatic Transmission Systems

7 credits, Fall

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 and service. Prerequisites: AM-129 with a C or better.

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.

ANT**Anthropology****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: 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: 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: WRD-090 or placement in WRD-098.

ANT-231 Native Americans of the Pacific Northwest

4 credits, Not Offered Every Term

Survey of Native American cultures in the Pacific Northwest region from prehistoric times to the present. Course is based on archaeological, ethno-historical, and ethnographic evidence. Includes contemporary issues in Northwest Native American life. Recommended: 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: 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: WRD-090 or placement in WRD-098. Corequisites: CWE-281.

ART**Art****ART-100A Jewelry Making Techniques**

1 credit, 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-116 Basic Design: Color Theory & Composition

4 credits, Not Offered Every Year

Explore the use of color in art. Create charts, paintings and collages that investigate the elements, principles and theory of color. Examine historical and contemporary issues and ideas of color and composition in the arts.

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 that explores digital systems that artists and designers use to see, process and communicate in a quickly changing world. Pocket technology, online journaling and social media will be utilized to present the development of a personal aesthetic and encourage a daily art practice. Emphasis on ways to personalize the digital experience and streamline creative output. Projects and critiques will introduce students to the principles of design as a vocabulary to discuss work and solve visual problems. Group discussions will focus on clarifying visual communication and engaging with diverse audiences effectively.

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

3 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

3 credits, Winter/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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

ART-225 Computer Graphics I

3 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: ART-115.

ART-226 Computer Graphics II

3 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. Recommended: ART-225.

ART-227 Computer Graphics III

3 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. Recommended: ART-225 and 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-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, Winter/Spring

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, Winter/Spring

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

3 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

3 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. Lecture 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 installing art work, business concerns, art market dynamics, art collecting. Field trips to local galleries and/or guest lectures. Recommended: WR-121.

ASC**Arts & Sciences****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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

ASC-177 Integrated Science Inquiry

4 credits, Spring

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: WRD-098 or placement in WR-121.

ASE**Adult Secondary Education****ASE-010 Basic Math**

0 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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: ASE-071A and ASE-071B or equivalent.

ASE-072B Algebra 2B

0 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 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 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.

ASL**American Sign Language****ASL-101 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: WRD-098 or placement in WR-121.

ASL-102 American Sign Language

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 American Sign Language

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.

BA**Business Administration****BA-101 Introduction to Business**

4 credits, Fall/Winter/Spring

Introduces the American business system in a changing global environment. Disciplines covered include economics, entrepreneurship, formation, accounting, finance, marketing, and management. Recommended: WRD-090 or placement in WRD-098.

BA-103 Business Strategies for Computer Consultants

3 credits, Not Offered Every Term

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: taxes, product or service mark-ups and mark-downs; simple and discounted interest; present and future value of a single sum of money and annuities; gains, losses, and valuations of stocks, bonds, mutual funds, and other investments; depreciation; inventory valuation; and financial ratio analysis. This course meets the Related Instruction Computation requirement. Prerequisites: MTH-020.

BA-111 General Accounting I

4 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, and BA-101 and BA-104 with a C or better.

BA-112 General Accounting II

4 credits, Not Offered Every Term

Provides a more in-depth look at general accounting principles and practices for small business. Topics include 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 as a tool for evaluating the health and wealth of a business is introduced. Prerequisites: BA-111.

BA-119 Project Management Practices

2 credits, Winter

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-122 Teamwork

3 credits, Spring

Focuses on team dynamics and skills for achieving goals while working in a diverse group. Students complete a team project and in the process, practice successful communication strategies, goal definition, schedule coordination, peer feedback, and conflict management. Additional course topics include learning styles, diversity, appreciating differences, and ethical behavior in teams. 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-124 Negotiation

3 credits, Spring

Approaches negotiation from both theoretical and practical perspectives, with an emphasis on successful integrative as well as ethical, negotiation techniques. Students engage in multiple one-on-one and team negotiation role plays and complete both pre- and post-negotiation analyses. Students also evaluate effective negotiations from the perspective of themselves and their peers through in-class debrief sessions.

BA-125 Advanced Project Management Tools

5 credits, Fall

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-126 Project Management: Workshop

3 credits, Winter

In small teams, students will manage a simulated project, including overseeing schedule and resources, and reporting project status. As a final outcome, student teams submit a report and presentation that summarizes the project experience and lessons learned. Course tools include Microsoft Project, in which the student is expected to have prior training. Prerequisites: BA-120 and BA-125. Prerequisite or Corequisite: BT-177.

BA-130 Leadership in Literature

4 credits, Not Offered Every Year

Examines the nature of leadership by analyzing characters in major literary works. Recommended: WRD-098 or placement in WR-121.

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 coursework. Recommended: BT-120, and WRD-090 or placement in WRD-098.

BA-156 Business Forecasting

3 credits, Winter

Basic economic principles applied to business decision-making, forecasting, and critical thinking skills related to budgeting, planning, financial analysis, and application of business policy and practice. Designed for business majors. Recommended: WRD-090 or placement in WRD-098.

BA-177 Payroll Accounting

3 credits, Winter

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.

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: BA-131 and WR-121.

BA-206 Management Fundamentals

4 credits, Fall/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: WRD-090 or placement in WRD-098. Recommended: BA-251.

BA-208 Employee and Labor Relations

4 credits, 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 I

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, reconciling the cash account, internal controls, ratio analysis, ethics, and financial statement reporting. Emphasis is on procedure and process. Prerequisites: BA-101. Recommended: BA-104 and BA-111.

BA-212 Financial Accounting II

4 credits, Fall/Winter/Spring/Summer
BA-212 picks up where BA-211 left off with accrual accounting principles and practices for service and merchandising organizations. In this course, students examine several accounting practices more in depth, including accounts receivable, plant assets, investments, current and long-term liabilities, payroll, stockholders' equity, and the cash flow statement. Students are taught how to evaluate financial position through financial statement analysis. This second financial accounting course is designed for students who are interested in business in general, as well as those who are planning a career in accounting. Prerequisites: BA-211.

BA-213 Decision Making With Accounting Information

4 credits, Fall/Winter/Spring/Summer
Building on the introduction to financial accounting in BA-211 and BA-212, BA-213 focuses on managerial accounting, which is the language of business for internal management in manufacturing and service organizations, and which drives effective pricing and operational decisions. Managerial accounting analyzes information about the costs of products and services, as well as for jobs and processes, and how costs flow through the system. Budgets convey an organization's plan of operations, while performance reports compare variances with actual results and examine KPIs. This course is recommended for those interested in business in general, as well as for those planning a career in accounting. Prerequisites: BA-212.

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: WR-101 or WR-121, and CS-120 or BA-131.

BA-216 Cost Accounting

3 credits, Winter
Job order and process costing to a higher level, including variances and cost estimations; standard and variable costing in a manufacturing environment; inventory and capacity analysis; customer-profitability analysis; spoilage, rework and scrap; and performance measurement. Prerequisites: BA-213. Recommended: WRD-090 or placement in WRD-098.

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 and sales forecasts, and cost behavior. Recommended: BA-211 or BA-213, or experience in accounting or budgeting, and BA-131 or CS-135S.

BA-218 Personal Finance

4 credits, Fall/Winter/Spring
Analysis and application of basic principles of personal finance including career planning, 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: MTH-020 or placement in MTH-050 or MTH-060, or BA-104; and WRD-090 or placement in WRD-098.

BA-222 Financial Management

3 credits, Winter
Study of sources and uses of funds, financials, and cash flows; includes valuation of financial assets; long-term cash flows and budgeting; cost of capital; capital structure and dividend policy; working-capital management, ethics, and international business finance. Prerequisites: BA-212.

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: 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. Recommended: WRD-090 or placement in WRD-098.

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. Recommended: WRD-090 or placement in WRD-098.

BA-227 Business Law II

4 credits, Winter
Emphasis on real and personal property, negotiable instruments, insurance, documents of title, secured transaction, bailments, commercial paper, agency, bankruptcy, suretyship, bulk sales, and estate planning. Prerequisites: BA-226.

BA-228 Computerized Accounting

3 credits, Spring
Provides the student with an introductory hands-on experience to learn how computers are used for accounting applications using a Windows operating system environment. 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. Prerequisites: BA-224. Recommended: WRD-090 or placement in WRD-098.

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: 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: 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 requires 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-131 and BA-212.

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: WRD-090 or placement in WRD-098.

BA-250 Small Business Management

3 credits, Winter

Managing a small business, identifying a market opportunity, developing a business plan, and meeting the competition. Also includes financial accounting and cash-flow projections. Recommended: WRD-090 or placement in WRD-098.

BA-251 Supervisory Management

3 credits, Fall/Winter/Spring

Addresses the role and responsibilities of the first-line supervisor or manager. Includes analyzing business, dealing with change, staffing and scheduling, leadership, decision-making, motivational skills, legal considerations, and managing teams. Recommended: 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 Advanced Topics in Accounting

4 credits, Spring

Build upon knowledge obtained from the Principles of Accounting courses to comprehend and gain practice in more advanced and specialized areas of accounting, which may include Government and Nonprofit Accounting, Auditing and Fraud, and/or Data Analytics. Prerequisites: BA-212. Recommended: 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 partnership and corporate tax returns. Recommended: BA-211 and BA-212, 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: WRD-090 or placement in WRD-098.

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 AAS Project Management degree program. Prerequisites: BA-120, BA-125, and BT-177.

BA-280 Business/CWE

3-6 credits, Fall/Winter/Spring

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: 3-6 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. Recommended: WRD-090 or placement in WRD-098.

BI**Biology****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: MTH-060 or MTH-098 or placement in MTH-065; and WRD-098 or placement in WR-121.

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: MTH-060 or MTH-098 or placement in MTH-065; and WRD-098 or placement in WR-121.

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: MTH-060 or MTH-098 or placement in MTH-065; and WRD-098 or placement in WR-121.

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, natural selection, tissues and organ systems. Topics and skills covered prepare students to enter BI-231, Anatomy & Physiology and BI-234, Introductory Microbiology. Recommended: MTH-060 or MTH-098 or placement in MTH-065, and WRD-098 or placement in WR-121. Recommended Corequisite: CH-112.

BI-120 Introduction to Human Anatomy and Physiology

4 credits, Fall

This laboratory course is designed to serve the students in the Career Technical Programs: Medical Assistant and Clinical Laboratory Assistant students as part of their core curriculum. 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 the practice of these fields. Animal organ dissection 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 credit, 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, 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, Spring

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-121. Recommended: One term of college-level science.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

BI-177 Integrated Science Inquiry

4 credits, Spring

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: WRD-098 or placement in WR-121.

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-111 or placement in MTH-112. Recommended: WRD-098 or placement in WR-121.

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.

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.

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.

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.

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.

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.

BT**Business Technology****BT-120 Personal Keyboarding**

2 credits, Fall/Winter/Spring

Basic instruction on electronic alphanumeric keyboard. Provides practice for speed and accuracy with individual program. Students will develop the necessary skills to effectively use the Internet, use email, and create simple documents.

BT-121 Data Entry

1 credit, 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

Designed to improve typing proficiency using the standard keyboard. Students will refine and further develop speed and accuracy skills learned in BT-120 Personal Keyboarding as well as refine the proper formatting of various types of business letters, learn the proper format of an interoffice memo, and review and utilize proper email etiquette within a business setting. Students will utilize MS Word to create letters and memos. Prerequisites: BT-120.

BT-124 Business Editing I

3 credits, Fall/Winter

Course builds communication skills through the study of correct usage of grammar, spelling, vocabulary usage, effective writing, and editing principles. Recommended: WRD-090 or placement in WRD-098.

BT-125 Business Editing II

3 credits, Winter/Spring

This course follows BT-124 and uses the second half of the same textbook. It covers additional new grammar rules, in addition to other punctuation, capitalization, and numbers. The course also covers composing business communication documents such as memorandums, letters, and reports, as well as using effective communication in a business environment. 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: BT-124 and 35 words per minute typing skill.

BT-172 Introduction to Microsoft Outlook

2 credits, Spring

Introductory course to using Microsoft's Outlook application as a tool to send and receive e-mail, organize schedules and events, maintain contacts lists, to-do lists, and notes. The material covered in this course teaches the necessary skills that are required in those business environments that use Outlook.

BT-177 Microsoft Project

3 credits, Winter

Covers the basics of using Microsoft Project to plan, schedule, and track a project. Also addresses communicating project information, assigning and tracking resources and costs, tracing progress, and closing a project. Concludes with students using Microsoft Project to produce management and other reports and to share project information with other audiences and applications. Required: Access to MS Project or use CCC Dye Academic Computer Lab for coursework.

BT-216 Office Procedures

4 credits, Spring

Presents critical thinking, problem solving, and collaborative learning; skills and knowledge are applied to business office operations, including communications, technology, records management, safety, travel, meeting management, mail procedures, reprographics, and career planning. Prerequisites: BT-160.

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: BT-161 with a C or better.

BT-271 Advanced Business Projects

4 credits, Spring

Participate in real-world administrative office experience on the campus of CCC by working as team members in a professional environment. Practice using oral and written communications, analyzing information, event and project planning, problem solving, decision making, prioritizing, applying time management skills, and using industry standard technology skills and tools. Each student will spend 60 to 72 hours per term working in a CCC Office (paired with an Administrative Professional), 2 hours per week within the classroom. Prerequisites: BA-131, BA-205, BT-122, BT-125, BT-160, BT-161, BT-262, and CS-135S.

CDT**Computer-Aided Drafting Technology****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: CDT-102.

CDT-108A Introduction to SolidWorks

3 credits, Fall/Spring

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-223 Inventor Fundamentals

3 credits, Winter

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, Winter

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.

CH**Chemistry****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.

CH-105 Introductory Chemistry

5 credits, Summer/Winter/Spring

A laboratory 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.

CH-106 Introductory Chemistry

5 credits, Spring/Summer

A lab course discussing organic and biochemistry. Prerequisites: CH-105.

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.

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: WRD-090 or placement in WRD-098.

CH-150 Preparatory Chemistry

4 credits, Fall

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 with a C or better or placement in MTH-111.

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).

CH-222 General Chemistry

5 credits, Winter/Spring

A lab course discussing reactions, stoichiometry, thermodynamics, organic compounds and polymers, kinetics, and equilibrium. Topics involving organic chemistry and biochemistry are introduced. Prerequisites: CH-221.

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.

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.

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.

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.

CJA**Criminal Justice****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, Summer

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/Spring

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. Prerequisites: CJA-110 with a C or better.

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 Criminal Investigation I and CJA-211 Criminal Investigation II. 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. Prerequisites: CJA-210 and CJA-211 with a C or better.

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, 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-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. Prerequisites: CJA-110 with a C or better.

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.

CJA-243 Drugs, Crime and the Law

3 credits, Spring

Examines the most common types of drugs consumed in the U.S. and societal problems related to drug use. Discusses potential crimes associated with drugs, and law enforcement strategies used to address drug manufacturing, distribution and use. Prerequisites: CJA-110 with a C or better.

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-121 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. Corequisites: CJA-280 and CWE-281, or HD-102.

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.

CLA**Clinical Laboratory Assistant/Phlebotomy****CLA-100 Introduction to Health Care**

2 credits, Fall

An overview and introduction to health-care systems and career trends, ethical and legal responsibilities, personal and workplace safety, blood-borne pathogens, professionalism, life-long learning Health Insurance Portability and Accountability Act (HIPAA), and effective communication.

CLA-101 Clinical Laboratory Assistant Skills I

3 credits, Fall

Presents the student with a general overview of a clinical laboratory, including state and federal regulations, quality assurance practices, laboratory terminology, laboratory staffing and a basic understanding of Waived laboratory testing. Specimen collection and handling will be addressed. The majority of the competencies required in the Core Module of the National Accrediting Agency for Clinical Laboratory Science, (NAACLS's) Clinical Assistant Program will be covered. Required: Student Petition. Required: Admission to the Clinical Laboratory Program. Prerequisites: MA-110, and MTH-050 or MTH-065. Corequisites: CLA-101L.

CLA-101L Clinical Laboratory Assistant Skills Lab I

1 credit, Fall

CLA-101L is a companion course to CLA-101 and presents the students with a general overview hands-on clinical laboratory skills, including performance of waived testing and specimen processing within the boundary of state and federal regulations. It presents quality assurance practices, insuring a basic understanding of quality laboratory testing. Many of the competencies required in the Core Module of the National Accreditation Agency of Clinical Laboratory Science (NAACLS's) Clinical Assistant Curriculum will be covered. Required: Student Petition. Corequisites: CLA-101.

CLA-102 Clinical Laboratory Assistant Skills II

3 credits, Winter

This course covers hematology and urinalysis theory at the clinical assistant level scope of practice. Correct specimen collection will be emphasized. This course will instruct students to define, assess, and evaluate various waived tests. Accuracy and attention to detail will be stressed. Quality control topics covered include the use of controls, standards, and laboratory protocols. Required: Students must be admitted into the current CLA cohort, or Student Petition. Prerequisites: CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, and BI-120 or equivalent. Corequisites: CLA-102L.

CLA-102L Clinical Laboratory Assistant Skills Lab II

1 credit, Winter

Addresses hematology and urinalysis laboratory techniques within assistant level scope of practice. Correct specimen collection techniques, hematology and urinalysis terminology, and quality assurance issues, will be practiced. Some of the required competencies of National Accrediting Agency of Clinical Laboratory Science (NAACLS) will be addressed or revisited. Required: Student Petition. Required: Students must be admitted into the current CLA cohort. Prerequisites: CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, and BI-120 or equivalent. Corequisites: CLA-102.

CLA-103 Clinical Laboratory Assistant Skills III

3 credits, Spring

A continuation of CLA-101 and CLA-102 with emphasis on microbiology, clinical chemistry, serology, and immunology. The clinical laboratory assistant scope of practice, professionalism in the workplace and patient test management will be discussed in detail. Required: Student Petition. Required: Students must be admitted into the current CLA program. Prerequisites: CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, and BI-120. Corequisites: CLA-103L.

CLA-103L Clinical Laboratory Assistant Skills Lab III

1 credit, Spring

A continuation of CLA-101L and CLA-102L with emphasis on microbiology, clinical chemistry serology and immunology. The clinical laboratory assistant scope of practice when performing waived testing and professionalism in the workplace will be practiced. Some of the NAACLS competencies will be performed and/or revisited. Required: Student Petition. Required: Students must be admitted into the current CLA program. Prerequisites: CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, and BI-120. Corequisites: CLA-103.

CLA-115 Laboratory Administrative Skills

2 credits, Winter

Designed for the laboratory assistant employed in any healthcare facility, most applicable to physician's office laboratory, instructing them in laboratory coding, billing and insurance practices, and other administrative duties, with emphasis on patient test management and professionalism. This course also covers vital signs as required by NAACLS. Required: Student Petition.

CLA-118 Phlebotomy for Clinical Laboratory Assistants

1 credit, Fall

Designed for the clinical laboratory assistant student to provide a broad understanding of blood collection and specimen handling techniques used in ambulatory and medical center laboratories. Also prepares students to perform these tasks effectively and safely in the workplace. Universal and standard precautions and other state and federal laboratory regulations will be addressed. Required: Student Petition. Required: Student must be admitted into the current CLA cohort. Corequisites: CLA-118L.

CLA-118L Phlebotomy for Clinical Laboratory Assistant Lab

1 credit, Fall

This course is a companion course to CLA-118 and is designed for the Clinical Lab Assistant student to practice and gain skill and experience in blood collection according to standard operating procedures. Students will practice specimen handling and processing techniques used in laboratories. The students will perform these activities effectively and safely, emulating the workplace environment. Universal and Standard Precautions will be stressed. The students will collect blood samples on their lab partners through-out the term. Required: Student Petition. Required: Student must be admitted into the current CLA cohort. Corequisites: CLA-118.

CLA-119 Laboratory/Phlebotomy Practicum

3 credits, Winter

Students will participate in supervised, unpaid assignment, in community medical center and clinic laboratories to gain practical experience. A weekly seminar accompanies this course. Required: Student Petition. Required: Student must be enrolled in current CLA cohort. Prerequisites: CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, and BI-120 or BI-101 and BI-102.

CLA-120 Laboratory/Phlebotomy Practicum II

4 credits, Spring

CLA-120 is a continuation of CLA-119. Students will participate in a supervised, unpaid assignment, known as a clinical practicum in area medical laboratories to gain practical experience. A weekly seminar accompanies this course. Required: Student Petition. Prerequisites: CLA-119.

CLA-125 Introduction to Clinical Research

2 credits, Spring

An overview of research as applied through clinical studies. Participants will learn elements of proper research techniques as conducted under the supervision of a physician or Ph.D. Required: Student Petition. Required: Student must be enrolled in current CLA cohort.

CLA-130 Specimen Collection

1 credit, Winter

This course covers appropriate specimen collection of all constituents of human anatomy for various laboratory testing and teaches students to recognize inappropriate specimen collection and develop problem solving skills as health professionals to protect patient safety. The final portion of this course qualifies students to perform drug testing collections under US Department of Transportation (DOT) regulations. The final exam will include a demonstration for collection proficiency. Specimen management and potential adulteration of specimens for drug testing will be addressed. This course is required for Clinical Laboratory Assistant program students. Required: Student Petition. Prerequisites: CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, and BI-120 or equivalent.

COMM**Communication Studies****COMM-100 Basic Speech Communication**

3 credits, Fall/Winter/Spring

Explores interpersonal and small group dynamics and communication skills in day-to-day formal and informal situations. Examines positive self-concept, listening skills, verbal and non-verbal modes of communication, and clarity of expression. Designed for non-transfer students.

COMM-111 Public Speaking

4 credits, Fall/Winter/Spring/Summer

Practice in organization, research and delivery of a variety of speeches. Prerequisites: WRD-098 or placement in WR-121.

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-111 or Student Petition.

COMM-126 Introduction to Gender Communication

4 credits, Fall/Winter

Examines masculine and feminine communication patterns, including their differences and similarities. Discusses gender identity formation, roles, social influences, and current issues in various personal and professional settings. Recommended: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

COMM-218 Interpersonal Communication

4 credits, Fall/Winter/Spring/Summer

The interpersonal communication process is examined through lectures, reading, and exercises. Subjects include personal and professional relationships, goal-setting, first impressions, conflict resolution, non-verbal messages, image building, self-concepts and assertiveness. Recommended: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: Placement in WR-121.

COMM-280 Speech/CWE

2-6 credits, Fall/Winter/Spring

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.

CS**Computer Science****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: Placement in CS-120, and WRD-098 or placement in WR-121.

CS-125H HTML & Web Site Design

3 credits, Summer/Fall/Winter

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 site management, validators, and page editors. Recommended: CS-120 or equivalent experience.

CS-133S Introduction to JavaScript & Server-Side Scripting

3 credits, Winter

Design, programming, testing of scripted web pages using JavaScript for client-side applications and PHP for 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. Prerequisites: CS-125H and MTH-065 or equivalent experience. Recommended: MTH-060 or placement in MTH-065.

CS-133VB Visual Basic.NET I

3 credits, Fall/Winter/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. Recommended: 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. Required: Computer literacy: file management; familiarity with Microsoft Office interface; cut, copy & paste.

CS-135I Advanced Web Design With Dreamweaver

3 credits, Spring

Plan and publish a standards-based, accessible web site via a variety of tools, including the Adobe Creative Suite. 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, or equivalent experience with hand-coded HTML and CSS.

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. Required: Computer literacy: file management, familiarity with MS Office interface, ability to understand and use provided formulas to solve problems.

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. Required: Computer literacy: file management, fluency with operating system, familiarity with MS Office interface.

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-121.

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 the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. By the end of the course, students will be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes. This course, along with CS-152, cover the topics on the CISCO CCENT exam. Prerequisites: CS-160 or Student Petition.

CS-152 Networking II

4 credits, Spring

Practices the building and servicing of basic computer networks. Topics include physical media, network design, addressing, routing, switching, and management used in common LANs and the Internet. This course, in conjunction with CS-151, covers the topics of the CompTIA Network+ exam. Prerequisites: CS-151 and CS-227.

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: MTH-060 or placement in MTH-065. WRD-098 or placement in WR-121. CS-120 or placement in CS-121.

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-111 or placement in MTH-112, 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

3 credits, Winter

Explores creating dynamic and interactive web sites via the use of a current content management system (CMS) and shopping cart utility. Includes installation of CMS/database, working with templates, creating efficient site navigation, enhancing sites using components, modules, plugins and extensions, and user management. Prerequisites: CS-125H, or equivalent experience with hand-coded HTML and CSS.

CS-201 Computer Systems II

4 credits, Fall

Introduction to computer systems from a software perspective. Topics include: Basic machine organization, system programming in C and assembly language, introduction to system programming tools (gcc, makefile, gdb), data representation (bits & bytes, characters, integers, floating point numbers), implementation of control flow, procedure calls, and complex data types at the machine level, linking and loading, exceptions and interrupts, process control and signals, system calls, file I/O, timing and improving program performance, basic memory hierarchy, and dynamic memory allocation techniques. Prerequisites: CS-162.

CS-202 Program Structures

4 credits, Winter

Students will become familiar with advanced C++ and Java syntax for object-oriented programming. Use of the file system, operating system calls, and shell-level programming; low-level debugging of high-level programs. Programming exercises will include applications of data structures and memory management techniques. 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-121.

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-234J jQuery Web Development

3 credits, Spring

In-depth exploration of creating dynamic websites using the jQuery function library. Topics include creating AJAX applications, XML and JSON data formats, image effects like sliders and lightboxes, navigation effects, mobile-friendly effects and more. Prerequisites: CS-133S or previous HTML and programming experience.

CS-234P PHP/MySQL Web Development

3 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 or equivalent experience. Recommended: CS-275.

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, b-trees, 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. Required: Computer literacy: file management, fluency with a current Windows OS, familiarity with virtual machines.

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: 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 Network Capstone

4 credits, Spring

This class affords students the opportunity to put all the discrete information learned from their program classes together towards the completion of an enterprise computer project.

CS-297W Website Capstone

3 credits, Spring

The capstone course for the web development AAS programs. 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-133S or CS-135I, and CS-195.

CWE**Cooperative Work Experience****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. Corequisites: Program specific CWE course.

DA**Dental Assistant****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 credit, 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 the Dental Assistant program. Prerequisites: DA-101 with a C or better. Corequisites: DA-102L.

DA-102L Dental Radiology II Lab

1 credit, 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 the 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 credit, 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 credit, Winter

Further develops 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 credit, 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: Admission into the 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 credit, 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 credit, 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 credit, 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.

DMC**Digital Media Communications****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: WRD-090 or placement in WR-121.

DMC-106 Animation & Motion Graphics I

3 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: ART-225, ART-226, DMC-104, and DMC-221.

DMC-107 Animation & Motion Graphics II

3 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: ART-225, ART-226, DMC-104, and DMC-221. Previous experience with computer graphics and digital video.

DMC-108 Animation & Motion Graphics III

3 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

3 credits, Not Offered Every Term

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: DMC-106 and ART-225.

DMC-131 Interactive Design for Games

3 credits, Not Offered Every Term

This course introduces many of the skills and processes used to create games and other interactive media for the web. Students will create webpages featuring media including sound, animation and 3D graphics. Students will design and program interactivity using JavaScript, the native programming language of web browsers. Students will gain a solid foundation in interactive design and programming. Recommended: DMC-106 or Student Petition.

DMC-132 Video Game 3D Modeling

3 credits, Not Offered Every Term

This course is intended for students interested in pursuing a career in 3D modeling and/or 3D Video Game Art Production. Upon completion of the course, students will have a working knowledge of tools and navigation in industry-standard 3D modeling software along with techniques and pipeline familiarity in video game art production. Students will also learn the importance of deadlines, file management and organization. Recommended: DMC-104 or DMC-106 or DMC-107.

DMC-133 Introduction to Game Engines and Platforms (Beginning)

3 credits, Not Offered Every Term

This course provides students with an overview and practical introduction to creating games and other interactive experiences, such as simulations, educational content and even artistic media. Topics covered include: the game creation process, developing a critical understanding of games, basic programming skills, creating digital game assets, and interactive platforms such as WebGL and Unity3D. Recommended: DMC-106.

DMC-147 Music, Sound & Moviemaking

1 credit, 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-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: WRD-098 or placement in WR-121.

DMC-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 reviewed as a visual language and an evolving art form that expresses and influences American culture. Recommended: WRD-098 or placement in WR-121.

DMC-205 Directing for Film & Video

3 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: DMC-104, DMC-264, and WR-121.

DMC-221 Introduction to 2D Animation: Design & Techniques

3 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: CS-198 or ART-225 or equivalent experience.

DMC-222 Advanced 2D Animation: Design & Techniques

3 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, Winter

Introduction to the concepts, fundamentals and production of documentary film making. This lecture/lab course will explore traditions and new technological approaches to creating digital documentary films. Recommended: DMC-104 and DMC-194. Previous experience with film studies and digital video.

DMC-233 Game Engines and Platforms (Intermediate)

3 credits, Not Offered Every Term

This course provides students who have completed DMC-133 with an opportunity to expand and enhance their skills in creating games and interactivity, while exploring more advanced and complex projects. Topics covered include: designing and developing 3D games and interactivity, designing for touch and mobile interfaces, and professional practice. Students will complete projects that involve designing and developing a complete original 3D game prototype, both independently and as part of a team. Prerequisites: DMC-133.

DMC-242 Field Recording for Media

1 credit, 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: WRD-090 or placement in WRD-098, WRD-098 or placement in WR-121, 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: WRD-090 or placement in WRD-098, WRD-098 or placement in WR-121.

DMC-280 Digital Media Communications/CWE3-6 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

3 credits, Winter/Spring

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

3 credits, Winter/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.

EC

Economics

EC-200 Introduction to Economics

4 credits, Not Offered Every Term

General introduction to microeconomics as applied to individuals and firms and to macroeconomics as applied to the operation of the economy as a whole. Course topics include economic decision making, economic systems, supply and demand models, price determination, elasticity, household income, business ownership, profit maximization, production functions and costs, and competition and market structures. Also includes goals and problems of the macro economy such as fiscal policy and budgets, the role of financial institutions, money creation, and monetary theory and policy. Recommended: WRD-090 or placement in WRD-098.

EC-201 Principles of Economics: MICRO

4 credits, Fall/Winter/Spring/Summer

Focuses on micro-economic theory dealing with the behavior of individuals and profit-maximizing firms in market structures with varying degrees of completion. 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-121. Recommended: Sequence of EC-201 and EC-202 taken in order.

EC-202 Principles of Economics: MACRO

4 credits, Fall/Winter/Spring/Summer
Introduction to economic theory, policy, and institutions. Focuses on macro-economic theory, scarcity, production, money, unemployment, inflation, and international finance. Prerequisites: MTH-020 or placement in MTH-050 or MTH-060. Prerequisite or Corequisite: WRD-098 or placement in WR-121. Recommended: Sequence of EC-201 and EC-202 taken in order.

ECE

Early Childhood Education

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-139 Program Management in ECE

1 credit, 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 credit, 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 credit, Not Offered Every Term

Introduces core concepts of kindergarten readiness, including outcomes that are focused in on Pre-K as well as strategies for children as they prepare for kindergarten.

ECE-144 Working With the Gifted Young Child

1 credit, Not Offered Every Term

Focuses on understanding the needs of the gifted young child and selecting strategies for supporting their development individually as well as in group settings.

ECE-150 Introduction to Early Childhood Education & Family Studies

3 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-154 Language & Literacy Development

3 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. Practical strategies for promoting optimal development will be emphasized.

ECE-177 Maximizing the Outdoors in ECE Curriculum

3 credits, Spring

Focuses on how to plan, create, and implement effective outdoor learning experiences. Topics include the benefits of using the outdoors to build a child's interest in the environment and expand understanding of the world while fostering divergent thinking and creativity. Prerequisites: ECE-240.

ECE-179 The Professional in Early Childhood Education and Family Studies

2 credits, Spring

Focuses on the role of the professional in Early Childhood Education (ECE) and is individualized to meet the unique professional development needs of each student. Students will receive information on the National Association for the Education of Young Children's Code of Ethical Conduct and information on what it means to be an ECE Professional. Students will also create a professional portfolio to demonstrate their commitment to professionalism.

ECE-221 Observation & Guidance II in ECE Settings

4 credits, Spring

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-235 Nutrition, Music & Movement in Early Childhood Education

3 credits, Fall

Course focuses on factors that contribute to childhood obesity. Students explore current standards and evidence-based practices in nutrition education, movement and music in early childhood and explore ways to incorporate developmentally appropriate nutrition, music and movement education into the early childhood environment and curriculum.

ECE-239 Helping Children and Families Cope With Stress

3 credits, Fall

Focuses on stressors in society that can affect children and families including environmental stress, divorce and death. Effective strategies teachers can use to support children and families during times of stress are included.

ECE-240 Environments and Curriculum Planning

3 credits, Winter

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-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-280 Early Childhood Education/CWE

2-6 credits, Spring/Summer

Cooperative work experience. Provides students with on-the-job experience in the field of early childhood education. Students will work nine hours a week in pre-approved educational settings that serve children from six weeks old through age eight. Variable Credit: 2-6 credits. Required: Student Petition. Prerequisites: ECE-121, ECE-150, and ECE-154. Corequisites: CWE-281.

ECE-289 The Project Approach in Early Childhood Education

1 credit, Winter

Designed to help participants explore in depth The Project Approach methodology. They will become familiar with the steps involved in setting up this integrated approach to learning within their own classrooms, while acquiring knowledge on how this study method supports preschool children's learning in all domains: social, emotional, cognitive, physical and language-literacy.

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-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-240, ED-254, ECE-291, and HDF-240.

ED**Education****ED-100 Introduction to Education**

4 credits, Fall/Winter/Spring

Examines career options and pathways in the field of education. Explores the history of and current issues impacting the American educational system. Provides an overview of diversity in educational settings and the characteristics of effective schools and teachers.

ED-113 Instructional Strategies in Reading & Language Arts

3 credits, Fall

Provides foundational knowledge for the teaching of literacy skills in pre-Kindergarten through secondary settings. Addresses foundations of literacy as well as the developmental stages of literacy. Focuses on instructional strategies for teaching reading and writing to diverse student populations.

ED-114 Instructional Strategies in Math & Science

3 credits, Spring

Introduces the development of math and science concepts and presents a systematic approach to math and science instruction. Emphasis is on linking math and science instruction and assessment to content standards.

ED-130 Comprehensive Classroom Management

3 credits, Fall

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.

ED-131 Instructional Strategies

3 credits, Spring

Examines the knowledge, skills, and characteristics of effective teachers. Focuses on successful instructional planning and delivery of curriculum. Covers teacher-centered and student-centered instructional strategies and ways to differentiate instruction for diverse learners.

ED-150 Creative Activities for Children

3 credits, Summer

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-200 Foundations of Education

3 credits, Winter

Provides an overview of the American educational system, including historical, legal and philosophical foundations of education. Explores the financing, governance and organization of education in the U.S. Examines the roles and ethical obligations of professional educators.

ED-220 Introduction to CTE in Oregon

3 credits, Fall

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-235 Educational Technology

3 credits, Fall

Prepares students for the use of media and technology in educational settings. Develops an understanding of the role of media in learning and methods for incorporating technology in instruction. Focuses on the use of technology tools to support how teachers create and evaluate learning experiences for students.

ED-246 School, Family & Community Relations

4 credits, Summer

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 Multicultural Education

3 credits, Spring

Covers the philosophy, activities, and techniques appropriate to a culturally sensitive classroom for students from pre-Kindergarten through post-secondary. Emphasizes understanding the impact of culture on individual perception and learning and group dynamics.

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.

EET**Electronic Systems Technology****EET-112 Electronic Equipment and Assembly I**

1 credit, 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 credit, 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 credit, 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: MTH-112.

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 & Kirchhoff'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-111.

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-112.

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: 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-112 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-230 Laser and Fiber Optics

3 credits, Spring

This course focuses on basic theory and practice of optical communication, lasers and fiber optics. Students study optical signals, optical fibers, optical components, testing and instrumentation, optical networks, etc. as well as general characteristics of LEDs, lasers, laser excitation, semiconductor lasers, etc. related to optical communication.

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: 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: IMT-139 or EET-139; EET-141 or MFG-131. Recommended: 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-252 Control Systems

3 credits, Winter

Covers basic control system and subsystems used controllers, sensors, transducers, motion and motor control systems. Recommended: EET-127 and EET-157.

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: 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.

EFA**Educational Focus Area****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.

EL**Study Skills****EL-103 Taking Effective Notes**

1 credit, 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.

EMP**Emergency Management Professional****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-121.

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.

EMT**Emergency Medical Technology****EMT-101 Emergency Medical Technician Part I**
6 credits, Fall/Winter

This course develops skills and training at the basic life support (BLS) level. Includes signs and symptoms of illness and injury, initial treatment, stabilization, and transportation. Focus on: airway management, and patient assessment. Required: Student Petition. Required: AHA BLS Provider CPR certification. Prerequisites: WRD-098 or placement in WR-121. Prerequisites: MTH-060 with a C or better or placement in MTH-065. Recommended: EMT-105 and MA-110.

EMT-102 Emergency Medical Technician Part II
6 credits, Winter/Spring

Continuation of EMT-101. This course focuses on: medical and trauma emergencies, special patient populations and EMS operations. Includes 20 hours of observational time in an emergency department and with an EMS unit. 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-107 EMT Rescue

3 credits, Spring

Covers EMS operational areas including rescue practices, standard and rapid patient extrication, introduction to heavy extrication, control of rescue operations, scene safety, and more. Prerequisites: EMT-101.

EMT-108 Emergency Response Patient Transportation

2 credits, Spring

Covers ambulance operations, laws, maintenance and safety, emergency response driving and route planning. Required: Required credits for the CCC one-year EMT certificate program and for students transferring to two-year AAS-EMT program. Prerequisites: EMT-101.

EMT-109 Emergency Response Communication/Documentation

2 credits, Winter

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. Required: Required credits for the CCC one-year EMT certificate program. Required for transferring to two-year AAS-EMT program. Prerequisites: EMT-101.

ENG**English Literature****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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

ENG-130 Leadership in Literature

4 credits, Not Offered Every Year
Examines the nature of leadership by analyzing characters in major literary works. Recommended: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

ENG-213 U.S. Latino Literature

4 credits, Not Offered Every Year
Survey of U.S. Latino/a literature of various genres and historical periods. Literary contributions by writers of varied cultural heritage, including Chicano, Cuban-American, Puerto-Rican and more. Prerequisites: WRD-098 or placement in WR-121.

ENG-218 Arthurian Literature

4 credits, Not Offered Every Year
Origins and development of Arthurian literature from medieval to modern times. Examines topics such as knight-hood, chivalry, the hero's quest, abduction and adultery, courtly love, the Round Table. Prerequisites: WRD-098 or placement in WR-121.

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-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

ENG-250 Greek Mythology

4 credits, Not Offered Every Year
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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

ENG-260 Introduction to Women Writers

4 credits, Spring
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: WRD-098 or placement in WR-121.

ENG-261 Literature of Science Fiction

4 credits, Not Offered Every Year
Introduction to the literature of science fiction in print and film, exploring historical and contemporary themes. The course covers a variety of authors and films, and examines the art and function of this genre of fiction. Recommended: WRD-098 or placement in WR-121.

ENG-266 The Literature of War

4 credits, Spring
Fiction, poetry, nonfiction, comics, and other genres dealing with the experience and aftermath of war. Shifting historical and cultural contexts will be paired with innovations in aesthetic responses. Texts may include Homer, Crane, Remarque, Heller, O'Brien, Silko, Satrapi, and Sacco. Recommended: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

ENG-297 A.S. Degree Portfolio

1 credit, 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.

ENGR**Engineering****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-112 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-112 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. Prerequisite or Corequisite: MTH-112 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-111.

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.

ESH***Environmental Safety & Health*****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.

ESL***English as a Second Language*****ESL-012 Beginning ESL**

0 credits, Fall/Winter/Spring/Summer
English language learners speak and listen to simple words, phrases, questions, statements and commands using common English vocabulary in simple, highly-structured tasks. Required: Student Petition.

ESL-014 Beginning Reading & Writing

0 credits, Fall/Winter/Spring/Summer
English language learners read and write the alphabet, sight words, and simple sentences. Required: Student Petition.

ESL-015 Beginning Reading, Writing and Grammar

0 credits, Fall/Winter/Spring/Summer
English language learners are introduced to the basic language necessary to function in day-to-day American society; language functions are taught in the contexts of work, family and community. Required: Student Petition.

ESL-016 Integrated Beginning ESL

0 credits, Fall/Winter/Spring/Summer
English language learners are introduced to the basic language necessary to function in day-to-day American society; language functions are taught in the contexts of work, family and community. Required: Student Petition.

ESL-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.

ESL-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.

ESL-025 Upper Beginning Writing

0 credits, Not Offered Every Term
English language learners 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.

ESL-030 Intermediate Grammar A

0 credits, Not Offered Every Term
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.

ESL-031 Intermediate Grammar B

0 credits, Not Offered Every Term
One of a two-part series. English language learners study and practice simple past and past progressive verb forms, present perfect verb forms with time expressions, and comparative and superlative adjectives and adverbs. Required: Student Petition.

ESL-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.

ESL-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.

ESL-035 Intermediate Writing

0 credits, Not Offered Every Term
English language learners 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.

ESL-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.

ESL-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.

ESL-046 Editing for Better Writing

0 credits, Fall/Winter/Spring/Summer
English language learners improve their writing through editing. They also engage in extended reading to provide a context for writing. Required: Student Petition.

ESL-047 Editing Part 1

0 credits, Not Offered Every Year
English language learners improve their writing through editing. Required: Student Petition.

ESL-048 Editing Part 2

0 credits, Not Offered Every Year
English language learners improve their writing through editing. Required: Student Petition.

ESL-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.

ESL-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.

ESL-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.

ESL-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.

ESL-054 Advanced Reading & Writing

0 credits, Fall/Winter/Spring/Summer
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.

ESL-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.

ESL-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.

ESL-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.

ESL-062 ESL Reading 1

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 ESL and everyday life. Required: Student Petition.

ESL-063 ESL Reading 2

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 ESL and everyday life. The course can be repeated, as learners read texts of progressively greater challenge, up to the college reading level. Students who have completed ESL Reading 1 will develop their reading skills at a higher level in ESL Reading 2. Required: Student Petition.

ESL-067 Spelling

0 credits, Not Offered Every Term
English language learners learn about and practice English spelling patterns and rules and individualize instruction to address spelling challenges. Required: Student Petition.

ESL-068 Bridge to Computers

0 credits, Not Offered Every Term
English language learners beyond the beginning level are introduced to computer technology. The course includes an overview of computer components and terminology and an introduction to applications such as word processing, Internet, e-mail, presentation, and other software. English reading, writing, speaking, and listening skills are developed through a variety of computer projects and interactive classroom work. Required: Student Petition.

ESL-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.

ESL-071 ESL Career Goal Lab

0 credits, Fall/Winter/Spring/Summer
English Language Learners who have already identified a career they want to pursue engage in goal setting around academic programs or other training, financial planning and support planning. The course may be taken multiple terms until the student successfully transitions to an academic program, a training program, or a living wage job. Required: Student Petition.

ESL-077 ESL Transition Lab: Career Exploration

0 credits, Fall/Winter/Spring/Summer
English Language Learners explore career options by assessing their strengths, exploring resources that explain employment requirements and trends connected to their areas of interest, and exploring resources that explain academic programs connected to their areas of interest. The course may be taken multiple terms until the student identifies a specific career goal. Required: Student Petition.

ESL-080 ESL 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 ESL, ABE, or GED classes. Required: Student Petition.

ESL-082 Assess/Evaluate New Students

0 credits, Fall/Winter/Spring/Summer
New students in the ESL program receive information about classes offered, departmental and college policies, college services available, campus facilities, student responsibilities, and community resources. Students are tested to determine their language levels and class placement. Required: Student Petition.

ESL-083 Educational Planning for Returning Students

0 credits, Fall/Winter/Spring/Summer
Designed for returning students in the ESL program at CCC. Students meet with their instructors to review their progress, revisit their goals, register for classes, and learn how to transition to other educational and training opportunities at the college and in other community programs. Required: Student Petition.

ESL-088 Beginning ESL Computer Skills Lab

0 credits, Fall/Winter/Spring/Summer
English language learners acquire basic computer skills. Required: Student Petition.

ESL-091 ESL Skills Lab

0 credits, Fall/Winter/Spring/Summer
English language learners are provided the opportunity to intensify their learning at each level. Students build on the language learning skills and strategies acquired during the previous and current terms. Required: Student Petition.

ESR**Environmental Science****ESR-171 Environmental Science**

4 credits, Fall
Introduction to environmental science issues, the scientific method, systems and feedback, biogeochemical cycles, human population growth, communities and ecosystems, productivity and energy flow, world food supply, the environmental effects of agriculture, and endangered species. Recommended: MTH-060 or MTH-098 with a C or better, or placement in MTH-065. WRD-098 or placement in WR-121.

ESR-172 Environmental Science

4 credits, Winter
Introduction to planning of parks and preserves, the scientific method, energy principles, fossil fuel recovery and use, renewable energy sources, nuclear energy, environmental toxicology, air pollution, ocean acidification, indoor air pollution, ozone depletion, and climate change. Recommended: MTH-060 with a C or better or placement in MTH-065. WRD-098 or placement in WR-121.

ESR-173 Environmental Science

4 credits, Spring
Introduction to minerals and the environment, the scientific method, environmental economics, waste management, biological diversity, biogeography and invasive species, ecological succession and ecosystem restoration, water management, water pollution, urban environments, and environmental sustainability. Recommended: MTH-060 or MTH-098 with a C or better, or placement in MTH-065. WRD-098.

FN**Food & Nutrition****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.

FR**French****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 course 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. Major topics and level of conversational difficulty will parallel FR-201. Prerequisites: FR-103 with a C or better.

FR-212 Intermediate French Conversation

3 credits, Winter

Second term of a three-term course 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. Major topics and level of conversational difficulty will parallel 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 course 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. Major topics and level of conversational difficulty will parallel FR-203. Prerequisites: FR-103 with a C or better, or Student Petition.

FRP***Fire Science (Wildland)*****FRP-101 Basic Forest Management**

3 credits, Not Offered Every Term

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 credit, Not Offered Every Term

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-107 Wildland Fire Career Portfolio

3 credits, Not Offered Every Term

Create a job-marketing tool that reflects knowledge, education and skills related to the wildland fire industry. Students will create a portfolio consisting of a resume, reference letters, work samples and other content that accurately reflects the student's employment fitness. Skills and knowledge related to the field of wildland fire and or forest management will be discussed.

FRP-110 Basic Wildland Fire Investigation (FI-110)

1 credit, 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/L-180)

2 credits, Not Offered Every Term

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 credit, 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: 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: FRP-130 (S-130/S-190/L-180).

FRP-212 Wildfire Power Saws (S-212)

2 credits, Not Offered Every Term
This course introduces the function, maintenance and use of internal combustion engine powered chain saws in wildland firefighting operations. Required: Student Petition. Required: Adequate footwear will be required for the field exercises. Adequate footwear includes a boot or hiking style boot with a minimum of an 8 inch upper (measured from the bottom of the heel to the top of the shoe/boot). A traction type (non-slip) tread is also required. The boot may either lace up or zip up. Students must be at least 18 years of age. 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-219 Wildland Firing Operations (S-219)

2 credits, Not Offered Every Term
The Wildland Firing Operations course introduces the roles and responsibilities of a firing boss (FIRB) and outlines duties of other personnel who may engage firing operations. The course discusses and illustrates common firing devices and techniques. Although comprehensive in nature, the course work is not a substitute for the dynamic fire environment. The course provides students with important information regarding general tasks required to be successful. Course equivalent to NWCG S-219 Firing Operations. Prerequisites: FRP-131 (S-131/S-133).

FRP-220 Initial Attack Incident Commander (S-200)

1 credit, 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: FRP-290 (S-290) in the last 3 years.

FRP-231 Engine Boss (Single Resource) (S-231)

1 credit, 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: FRP-290 (S-290) in the last 3 years. Corequisites: FRP-230 (S-230).

FRP-239 Division/Group Supervisor (S-339)

2 credits, Not Offered Every Term
This course prepares students to perform in the role of Division/Group Supervisor (DIVS). Instruction covers the specific tasks of the Division/Group Supervisor. Recommended: FRP-259 (S-330) and FRP-296 (S-390).

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 credit, 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 credit, 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-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 credit, 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-121.

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-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-121.

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-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).

FST**Fire Science Technology****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-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-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.

FYE**First Year Experience (FYE)****FYE-101 First Year Experience Level I**

2 credits, Fall/Winter/Spring/Summer

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-102 First Year Experience Level II

1 credit, Fall/Winter/Spring/Summer

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 credit, Fall/Winter/Spring/Summer

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.

G

Geology**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: 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: 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: 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 the geologic regions is examined by using basic geologic principles, rock types, hazards and the Northwest's tectonic history. Required: Two Saturday field trips.

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.

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: MTH-065 or placement in MTH-080 or MTH-095. Corequisites: G-203L.

GED

General Education Development**GED-011 GED in Espanol**

0 credits, Fall/Winter/Spring/Summer Instrucción del desarrollo de habilidades básicas ofrecida en español. El examen de diagnóstico determina las necesidades académicas del alumno. Entrada y salida de la clase todo el tiempo, se ofrece en el colegio principal: Se requiere el consentimiento del Instructor para registrarse. Basic academic skill-development instruction offered in Spanish. Diagnostic tests determine individual academic needs. Open-entry, open-exit class offered at Dye Learning Center. 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.

GEO**Geography****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 land-forms and explores how these influence human cultural settlement activities. Recommended: 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: 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: WRD-090 or placement in WRD-098.

GEO-208 Geography of the United States & Canada

4 credits, Fall/Winter/Spring
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: 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.

GER**German****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: WRD-098 or placement in WR-121.

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.

GER-201 Second-Year German I

4 credits, Not Offered Every Year
Provides opportunities to review and expand language skills to the point of intermediate proficiency through reading, writing, hearing and talking about contemporary issues in US and German-speaking countries. First of a three-term second year course. Prerequisites: GER-103.

GER-202 Second-Year German II

4 credits, Not Offered Every Year
Provides opportunities to review and expand language skills to the point of intermediate proficiency through reading, writing, hearing and talking about contemporary issues in US and German-speaking countries. Second of a three-term second year course. Prerequisites: GER-201.

GER-203 Second-Year German III

4 credits, Spring
Provides opportunities to review and expand language skills to the point of intermediate proficiency through reading, writing, hearing and talking about contemporary issues in US and German-speaking countries. Third of a three-term second year course. Prerequisites: GER-202.

GIS**Geographic Information Systems****GIS-101 Principles of Geospatial Technology**

2 credits, Fall/Spring
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 concepts of geographic information systems (GIS) utilizing hands-on application through a variety of laboratory exercises with industry-standard ArcGIS software. The class explores basic map principles, cartographic design, geodesy, and geospatial data manipulation while exploring ArcGIS 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 desktop Geographic Information Systems (GIS) principles using the ArcGIS software platform. Topics explored include working with geodatabases (feature datasets, feature classes, subtypes, domains, etc), topology, vector and raster analysis, creating and editing data, and process automation using ModelBuilder. 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, Spring

Explores basic cartographic design principles and how to apply them to produce high quality maps using GIS software. Introduces cartographic terminology, principles, and map-making tools. Major 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 common 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, Not Offered Every Term

An introduction to computer programming and Object Oriented Programming (OOP) with the Python language. 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 all the way to more advanced object-oriented programs. Recommended: 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-240 Geospatial Database Development and Management

3 credits, Not Offered Every Term

Introduces the fundamentals of relational databases (non-geographic and geographic). Covers SQL query basics to retrieve, edit, insert, and manipulate data. Learn geo-relational database design concepts and theory. Work with open source Postgres/PostGIS and ESRI's geodatabase products. Identify and apply key differences in developing, querying, managing, and administering an enterprise geodatabase. 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 (GIST) certificate program. 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, Winter

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.

GRN**Gerontology****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-179 Careers in Gerontology

1 credit, Fall

This course provides students an introduction to the multidisciplinary field of gerontology. Focus will be on the varied areas students can utilize a gerontology education including healthcare, housing, fitness, community development, and advocacy.

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: CWE-281.

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.

GS**General Science****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: MTH-065 or placement in MTH-095.

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: MTH-065 or placement in MTH-095.

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: MTH-065 or placement in MTH-095.

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.

HD**Human Development/
Career Planning****HD-100 College Survival**

1 credit, Fall/Winter/Spring/Summer

Covers various topics supporting student success and retention. May be repeated for up to 6 credits.

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-140 Career Exploration

1-3 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. Variable Credit: 1-3 credits.

HD-144 Assertiveness

1 credit, 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 credit, 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 credit, Not Offered Every Year

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 credit, Fall/Winter/Spring/Summer

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 credit, 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 credit, 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 credit, Not Offered Every Term

Using a variety of art media, learn how to use the creative process to define, plan, and achieve personal or professional goals.

HD-157 Procrastination & Time Management

1 credit, 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-158 Managing Change

1 credit, Not Offered Every Term

Course is designed to provide skills to understand and effectively navigate change in each student's life and the lives of those around them.

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.

HDF***Human Development/
Family Services*****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, Fall

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.

HDF-247 Preschool Child Development

3 credits, Winter

This course focuses on principles of development in children three to six years, including physical, cognitive, social and emotional growth, observation and assessment. Explores major historical theories of child development and current research and practices. Prerequisites: HDF-225.

HDF-260 Understanding Child Abuse and Neglect

4 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 upon intervention and mandatory reporting, as well as investigation and legal issues. This course presents the protocols related to forensic interviewing of abused children. Students will also learn about signs and symptoms of abuse and how trauma impacts an individual's health across a lifetime.

HE***Health*****HE-101 NCSF Certified Personal Trainer Exam**

0 credits, Not Offered Every Term

Students will take the National Council on Strength and Fitness (NCSF) exam at Clackamas Community College to become certified as a Certified Personal Trainer. Students with a test score of 70% or better will receive their certification from the NCSF. Required: Student Petition. Recommended: HE-201.

HE-103 NCSF Certified Sports Nutrition Exam

0 credits, Not Offered Every Term

Students will take the National Council on Strength and Fitness (NCSF) exam at Clackamas Community College to become certified as a Certified Sports Nutritionist. Students with a test score of 70% or better will receive their certification from the NCSF. Required: Student Petition. Recommended: HE-223.

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.

HE-202 Introduction to Fitness Technology Careers

1 credit, 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-205 Youth Addictions

3 credits, Fall

This course surveys the nature and extent of youth addictions. Students will explore causes and consequences of youth addiction, as well as interventions for youth and their families.

HE-207 Introduction to Plant Based Living

3 credits, Fall, Winter, Spring

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

Provides instruction on immediate and temporary care of injuries and sudden illness. Covers poisoning, control of bleeding, bandaging and CPR/AED/airway obstruction for adult, child and infant. Successful completion (A or B grade) of course leads to a Red Cross First Aid/CPR/AED certification.

HE-261 Community CPR

1 credit, 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 CADCI 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.

HOR***Horticulture/
Arboriculture/
Landscape/Organic
Farming***

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, edible crop planting, pest management, and tool and equipment operations. 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. Class includes a lab component.

HOR-115 Horticulture Safety

1 credit, Fall

Overview of safe practices in the horticulture workplace which will reduce the chance for accidents and injuries.

HOR-120 Pesticide Laws & Safety

1 credit, Spring

Plant protection methods for weed, insect or disease control. Laws and regulations related to safety, handling and storage of pesticides. Techniques for product selection, including chemical and non-chemical options, applicator safety and environmental protection included. Prepare and test for the Oregon Pesticide Laws & Safety exam.

HOR-122 Greenhouse I

3 credits, Fall

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, Fall

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. Class includes a lab component.

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, and post-harvest biology. Class includes a lab component.

HOR-125 Food Production in the Willamette Valley

3 credits, Not Offered Every Year

Exploration of historical, ethical, practical and scientific aspects of food production systems with a focus on the economic, social and environmental impacts of food and farming. Strengths and weakness of the agricultural system over time will be examined.

HOR-126 Landscape Water Features

1 credit, 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 credit, 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 credit, 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 credit, 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 Theory

3 credits, Winter

Covers plant anatomy and reproduction techniques of plants from seed, cuttings, grafting, division, and micro-propagation. Offers an in-depth overview of propagation systems that may be selected.

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. Class includes a lab component.

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, Winter

Reproduce food plants using a variety of methods, including seed, cutting and grafting techniques. Instruction will focus on methods suitable for sustainable farm operations. Class includes a lab component.

HOR-136 Organic Farming Practicum/Winter

3 credits, Winter

Essential organic farming practices, including seasonal activities such as ground preparation, planning for crop production, and irrigation system design and management. Also covers farm business structures, financial management, recordkeeping, and marketing 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. Class includes a lab component.

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, weed control strategies, building raised beds in the field, equipment operations, and soil, water and fertilizer management. Also covers preparation of the finished crop for market, transportation, display and marketing. 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. Class includes a lab component.

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-145 Turf Installation & Maintenance

2 credits, Spring

Installation and maintenance practices for turf grasses commonly used in landscapes. Emphasizes sustainable maintenance practices, installation, irrigation, pest identification and pest control. Class includes a lab component.

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 Society's demonstration orchard located on campus. Class includes a lab component.

HOR-148 Farm Equipment

3 credits, Spring

Identification and utilization of small-farm food crop production tools. Emphasis is on tools and techniques which result in high quality crops, efficient use of labor and capital resources, and protection of the natural environment. Class includes a lab component.

HOR-211 Native Plant Identification

1 credit, Summer

Identification and use of plants native to the Pacific Northwest and the use of plant keys.

HOR-212 Flower Arranger's Garden/Fall

2 credits, Fall

Learn to identify and use organic methods to grow fall season plants which are suitable for use as cut flowers and foliage. Includes basic floral design and visits to local cutting gardens. Ideal for garden designers, home gardeners, and growers of commercial cutting gardens. Class includes a lab component.

HOR-213 Computer-Aided Landscape Design

3 credits, Not Offered Every Year

Develop skills with Computer-aided design (CAD) software for creating landscape designs. Practice techniques utilized in common CAD programs used in the landscape industry. Prerequisites: HOR-229. Recommended: CS-120 or comparable computer skills.

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. Class includes a lab component. 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-220 Plant Propagation/Fall

3 credits, Fall

Proper techniques for reproducing plants from seeds, cuttings, and grafting. Emphasis on seasonal plant production. Class includes a lab component.

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: 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 that impact 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: 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, for fall plants. 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, for winter plants.

HOR-228 Plant Identification/Spring

4 credits, Spring

Identification of flowering trees, shrubs, and groundcovers, including their cultural requirements in the landscape, for spring plants. 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

Selection, operation, and maintenance of power driven machines, such as mowers, rototillers, chain saws, edgers, sprayers, tractors, and related equipment for nursery and landscape applications. Class includes a lab component.

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-232 Commercial Floral Design

3 credits, Not Offered Every Year

This course covers design techniques used by florists to create arrangements, corsages, and bouquets using fresh flowers. Cut flower conditioning and handling, pricing and sales strategies will also be covered. Class includes a lab component.

HOR-234 Intermediate Landscape Design

3 credits, Not Offered Every Year
Further skill development in drawing, site analysis, and design, including two, and three dimensional design concepts. Graphic exercises and model making skills will be included as well as the study of creative and practical solutions for various site and program requirements of commercial and residential landscape sites. Prerequisites: HOR-229.

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 insects which are important in greenhouse/nursery production, landscapes and food production.

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 credit, 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: HOR-231.

HOR-241 Nursery Management

3 credits, Not Offered Every Year
Essentials of nursery practices, including containers and field growing practices, crop scheduling, management, and marketing.

HOR-242 Plant Propagation/Spring

3 credits, Not Offered Every Year
Proper techniques for reproducing plants from cuttings, division, micropropagation and budding. Emphasis on seasonal plant production. Class includes a lab component.

HOR-244 Environmental 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, terminology and techniques, as well as ideas for marketing of sustainable designs. Class includes a lab component.

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. Class includes a lab component. Oregon State University transfer course.

HOR-248 Flower Arranger's Garden/Spring

2 credits, Spring
Learn to identify and use organic methods to grow spring season plants which are suitable for use as cut flowers and foliage. Includes basic floral design, garden planting and visits to local cutting gardens. Ideal for garden designers, home gardeners, and growers of commercial cutting gardens. Class includes a lab component.

HOR-250 Herb Growing and Gardening

1 credit, 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 credit, 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 credit, 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. Prepare and test for the Oregon Department of Agriculture Ornamental and Turf Insecticide/Fungicide exam. Class includes a lab component. Prerequisites: HOR-216, HOR-225, HOR-236, and HOR-237. Corequisites: HOR-120.

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 with the implementation of basic requirements and techniques employed by Plant Health Care Technicians who work on tree crews. Covers personal protective equipment, safe operation, routine maintenance and common techniques in accordance with current industry standards. Students will perform ground related activities, gaining experience in spray techniques, chipper operation, driving truck with chipper, interpretation of water audits, hazard tree identification, evaluation of key plants in the landscape, fertilization, customer education/communication and work site management. Class is a lab. Prerequisites: HOR-115, HOR-131, HOR-216, HOR-236, and HOR-237. Corequisites: HOR-120.

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 - Campus Farm/CWE

3 credits, Summer

Experiential learning of organic farming techniques, while working on the Campus Farm. Students learn ecological and sustainable practices, principles and management strategies, and will participate in marketing the produce. Students are allowed to enroll after completing nine credits of Organic Farming courses. Class includes a lab component. Required: Student Petition. Required: Students are expected to work a minimum of 108 job site hours. Corequisites: CWE-281.

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.

HPE**Health & Fitness****HPE-295 Health & Fitness for Life**

3 credits, Fall/Winter/Spring

This course explores interaction of physical fitness and health. Meets three hours a week for personal fitness assessment and three hours of classroom sessions. 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.

HS**Human Services****HS-100 Introduction to Human Services**

3 credits, Fall/Spring

This course focuses on the interpersonal skills, personal values, attitudes and knowledge necessary to become an effective human services worker. Also covers the history of human service work in the US, and the current status of social service provision. Required: Required for Human Services Generalist degree.

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 credit, 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

3 credits, Spring

This course prepares students to complete fieldwork in Human Services. Includes dynamics of the workplace, coping with work stress, supervision, ethics, and diversity. Covers setting learning objectives and creating successful field placements. Required: Student Petition. Prerequisites: HS-100 or HS-154.

HS-211 Infectious Diseases and Harm Reduction

1 credit, Summer/Winter

This course will explore the relationship between substance abuse 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. Will address knowledge needed to develop, run, and evaluate groups for a variety of human service topics, including substance abuse. 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.

HS-256 Advanced Interviewing Skills With Theory

3 credits, Fall

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-280 Human Services Generalist I: CWE/Practicum

2-6 credits, Fall/Winter/Spring

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: CWE-281.

HS-281 Human Services Generalist II: CWE/Practicum

2-6 credits, Fall/Winter/Spring

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: CWE-281.

HS-282 Human Services Generalist III: CWE/Practicum

2-6 credits, Fall/Winter/Spring

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. 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.

HST**History****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: 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: 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: 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: 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: 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: 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: 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: 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: 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 to the Age of Jackson. Prerequisite or Corequisite: WRD-098 or placement in WR-121. 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-121. Recommended: 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-121. Recommended: 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.

HUM**Humanities****HUM-160 Faith & Reason**

5 credits, Not Offered Every Term
Introduction to classical philosophy, sacred texts, modern fiction, poetry, theology, evolutionary biology, and cosmology. Consideration of how personal concepts of faith and reason and institutions of science and religion, shape personal intellectual landscapes. Recommended: WRD-090 or placement in WRD-098.

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. Recommended: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

IMT**Industrial Maintenance Technology****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. Prerequisites: MTH-050.

IMT-139 Principles of Troubleshooting I

2 credits, Winter
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: EET-112 or EET-137 or MFG-130.

IMT-215 Electromechanical Systems I

2 credits, Fall
This course emphasizes applied electromechanical principles. The theory and application of force, work, torque, energy power and force transformers are explored. Covers motion control systems, basic relay circuits and sensors, stepper and servo motors and power transmission systems. Introductory mechanics areas also covered, including simple machines and an introduction to static and dynamic forces. Prerequisite or Corequisite: EET-137 or MFG-130.

IMT-220 Industrial Machinery II

3 credits, Fall
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 and MFG-130.

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: EET-141 or MFG-131.

IMT-225 Electromechanical Systems II

2 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: IMT-215.

IMT-239 Principles of Troubleshooting II

2 credits, Fall
Covers advanced applications of diagnosis, maintenance and repair of systems. Also includes preventative maintenance, applied statistical process control and RF power generation. Recommended: EET-139.

J**Journalism****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: WRD-098 or placement in WR-121.

J-215 College Newspaper: Writing & Photography

3 credits, Fall/Winter/Spring
Students work as writers, photographers and editors on The Clackamas Print, the college's student-run newspaper and its website. Students study and produce news stories and news 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 6 credits. Recommended: Placement in WR-121.

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: WRD-098 or placement in WR-121.

J-220 Pod, Broad and Social - Journalism Across Platforms

4 credits, Not Offered Every Term
Students will learn to produce and publish news stories for a variety of platforms, including podcasting, TV, YouTube and other media. Lab component included. Recommended: WRD-098 or placement in WR-121.

J-221 Pod, Broad and Social - Intermediate Journalism Across Platforms

4 credits, Not Offered Every Term
Students will learn intermediate skills to produce and publish news stories for a variety of platforms, including podcasting, TV, YouTube and other media. Lab component included. Prerequisites: J-220 with a C or better. Recommended: WRD-098 or placement in WR-121.

J-222 Pod, Broad and Social - Advanced Journalism Across Platforms

4 credits, Not Offered Every Term
Students will produce and publish advanced news stories for a variety of platforms, including podcasting, TV, YouTube and other media. Lab component included. Prerequisites: J-221 with a C or better. Recommended: WRD-098 or placement in WR-121.

J-225 Intermediate College Newspaper: Writing & Photography

3 credits, Fall/Winter/Spring
Intermediate news writing and photo-journalism for publication in the student-run Clackamas Print and its online media. 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 6 credits. Prerequisites: J-215. Recommended: Placement in WR-121.

J-226 Introduction to College Newspaper: Design & Production

4 credits, Fall/Winter/Spring
Offers students interested in page design and news production basic skills to create the student newspaper, The Clackamas Print, including writing headlines, editing photography and using Adobe InDesign. May be repeated for up to 8 credits. Recommended: Placement in WR-121.

J-227 Intermediate College Newspaper: Design & Production

4 credits, Fall/Winter/Spring
Offers students interested in page design and news production intermediate skills to create the student newspaper, The Clackamas Print, including writing headlines, editing photography and using Adobe InDesign. May be repeated for up to 8 credits. Prerequisites: J-226.

J-228 Advanced College Newspaper: Design & Production

4 credits, Fall/Winter/Spring
Offers students interested in page design and news production advanced skills to create the student newspaper, The Clackamas Print, including writing headlines, editing photography and using Adobe InDesign. May be repeated for up to 8 credits. Prerequisites: J-227.

J-235 Advanced College Newspaper: Writing & Photography

3 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 6 credits. Prerequisites: J-225. Recommended: Placement in WR-121.

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.

LIB**Library****LIB-101 Introduction to Library Research**

1 credit, Fall/Winter/Spring/Summer
Trains students in the use of a variety of print and electronic information resources, search tools, and information evaluation. Excellent preparation for term papers and other research assignments. Recommended: CS-090 or equivalent experience.

MA**Medical Assistant****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-112 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, principles of confidentiality and medical office function. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: MA-110, and WR-101 or WR-121. Corequisites: BI-120 and MA-145.

MA-115 Phlebotomy for Medical Assistants

1 credit, Spring

The focus of this course is to understand 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 Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: MA-116, MA-117, MA-117L, MA-118, MA-118L, and MTH-054. Corequisites: MA-115L, MA-119, MA-121, and MA-121L.

MA-115L Phlebotomy for Medical Assistants Lab

1 credit, 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 Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: MA-116, MA-117, MA-117L, MA-118, MA-118L, and MTH-054. Corequisites: MA-115, MA-119, MA-121, and MA-121L.

MA-116 Introduction to Medications

4 credits, Winter

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 will be discussed. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: BI-120, MA-110, MA-112, and MA-145. Corequisites: MTH-054, MA-117, MA-117L, MA-118, and MA-118L.

MA-117 Clinical Lab Procedures I

1 credit, 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 Petition. Required: Student must be enrolled in a current Medical Assistant cohort. Prerequisites: BI-120, MA-112, and MA-145. Corequisites: MA-116, MA-117L, MA-118, MA-118L, and MTH-054.

MA-117L Clinical Lab Procedures I Lab

1 credit, 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 course in the Clinical Lab Procedures series. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: BI-120, MA-112, and MA-145. Corequisites: MA-116, MA-117, MA-118, MA-118L, and MTH-054.

MA-118 Examination Room Techniques

5 credits, Winter

This course covers fundamental theories of clinical practice and cognitive competencies involved in safe, efficient and quality exam room patient care and provider support. Special emphasis will be placed on the principles and skills of medical and surgical asepsis, infection control and safety in all exam room practices; preventative procedures, common diagnostic testing and related pathology, use of currently accepted techniques for and equipment in medication administration (excluding IV administration), patient care and interaction, and accurate documentation. This course provides a basis for critical thinking skills in the ambulatory setting. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: BI-101, BI-102, BI-120, BI-120L, BI-231, BI-232, BI-233, MA-110, MA-112, and MA-145. Corequisites: MA-116, MA-117, MA-117L, MA-118L, and MTH-054.

MA-118L Examination Room Techniques Lab
1 credit, Winter

This course covers fundamental skills which focus on the clinical techniques and competencies (psychomotor & affective) involved in safe, efficient and quality exam room patient care and provider support. Special emphasis will be placed on the principles and skills of medical and surgical asepsis, infection control and safety in all exam room practices; preventative procedures, common diagnostic testing and related pathology, use of currently accepted techniques for and equipment in medication administration (excluding IV administration), patient care and interaction, and accurate documentation. This course provides a basis for critical thinking skills in the ambulatory setting. Required: Student Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: BI-101, BI-102, BI-120, BI-120L, BI-231, BI-232, BI-233, MA-110, MA-112, and MA-145. Corequisites: MA-116, MA-117, MA-117L, MA-118, and MTH-054.

MA-119 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 Assisting course curriculum. Required: Student Petition. Prerequisites: MA-116, MA-117, MA-117L, MA-118, and MA-118L. Corequisites: MA-115, MA-115L, MA-121, and MA-121L.

MA-121 Clinical Lab Procedures II

1 credit, 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 Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: MA-116, MA-117, MA-117L, MA-118, MA-118L, and MTH-054. Corequisites: MA-115, MA-115L, MA-119, and MA-121L.

MA-121L Clinical Lab Procedures II Lab

1 credit, 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 Petition. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: MA-116, MA-117, MA-117L, MA-118, MA-118L, and MTH-054. Corequisites: MA-115, MA-115L, MA-119, and MA-121.

MA-145 Insurance & Health Information Management

5 credits, Fall

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. It also teaches Front Office finance skills including bookkeeping, banking and collections. 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 Petition. Required: Medical Assistant students only. Prerequisites: MA-110 and WR-121. Prerequisite or Corequisite: BI-120, or BI-101 and BI-102, or BI-231 and BI-232 and BI-233. Corequisites: MA-112.

MBC**Medical Billing and Coding****MBC-115 Insurance Billing and Reimbursement I**

4 credits, Fall

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

3 credits, Winter

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. 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, Fall

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, Winter

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, Winter

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, Fall

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-140 Billing and Coding Exam Review

1 credit, Spring

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: BA-131, MBC-115, MBC-116, MBC-120, MBC-125, MBC-126, MBC-135, and BI-120 with a C or better. Prerequisite Or Corequisite: COMM-218. Corequisites: MBC-225.

MBC-225 ICD-10, CPT® and HCPCS Coding II

5 credits, Spring

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. Corequisites: MBC-140.

MET**Manufacturing Engineering Technology**

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.

MFG**Manufacturing Technology****MFG-102 Makerspace: An Introduction to Digital Manufacturing**

1 credit, 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.

MFG-103 Machining for Fabrication & Maintenance

3 credits, Fall/Spring

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

2 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, Spring

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-111 Machine Tool Fundamentals I

3-9 credits, Fall/Winter/Spring/Summer

This course is an introduction to machine tool operation, precision measurement and engineering drawings. It also covers machine tool operations including drill presses, lathes and milling machines. The course includes internal and external threading. Variable Credit: 3-9 credits. May be repeated for up to 9 credits. Recommended: MFG-104, MFG-107, and MTH-050.

MFG-112 Machine Tool Fundamentals II

3-9 credits, Fall/Winter/Spring

This course is a continuation of machine tool operations. Covers set-up and operation of the vertical milling machine and boring techniques on the lathe. Includes surface grinding and selection of abrasive grinding wheels. Variable Credit: 3-9 credits. May be repeated for up to 9 credits. Prerequisites: 6 credits of MFG-111.

MFG-113 Machine Tool Fundamentals III

3-9 credits, Fall/Winter/Spring

Topics include offset boring heads, rotary tables, indexing devices, and taper attachments. Also covers applied technical math, inspection techniques, optical comparators, coordinate measuring machines, and cylindrical grinding. Variable Credit: 3-9 credits. May be repeated for up to 9 credits. Prerequisites: 6 credits of MFG-112. Recommended: MFG-111 and MFG-112.

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: 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: 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: MTH-050.

MFG-200 Introduction to CNC

1 credit, Not Offered Every Term

Short course to prepare students to be entry-level CNC machine operators. Covers fundamentals of operation, setup principles and G & M code programming. Students will use hands-on activities on industrial milling & turning centers. Recommended for individuals with limited knowledge of CNC machining. Recommended: MFG-111.

MFG-201 CNC I: Set-Up and Operation

4 credits, Fall

A hands-on class will teach students how to set-up and operate Computer Numerical Control (CNC) milling and turning centers. Includes an introduction to G&M-code programming. Designed for persons with little or no previous experience. Prerequisites: 6 credits of MFG-111. Recommended: MFG-109 and MTH-080.

MFG-202 CNC II: Programming & Operation

4 credits, Summer/Winter

This course emphasizes the writing of G&M machine codes. Students will learn advanced programming and operations of CNC milling centers and basic programming, set-up, and operation of CNC turning centers. Prerequisites: MFG-201.

MFG-203 CNC III: Applied Programming & Operation

3 credits, Fall/Spring

Students work individually or in small groups to design, program, manufacture, and test advanced projects using: CNC mills, CNC lathes, Electrical Discharge Machines (EDM) and various software applications. Prerequisites: MFG-202. Recommended: MFG-201 or MFG-204.

MFG-204 Computer-Aided Manufacturing I

4 credits, Fall

This course is an introduction 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. Prerequisites: 6 credits of MFG-111.

MFG-205 Computer-Aided Manufacturing II

4 credits, Winter

This course focuses on hands-on CNC and manufacturing activities, including Mastercam solids, lathe, and multi-axis. Additional topics will include reverse engineering and post-processing. Class time will be devoted to demonstrations, and in-class projects. Prerequisites: MFG-204.

MFG-206 Computer-Aided Manufacturing III

3 credits, Spring

This course exposes students to advanced CAD/CAM processes, including mill/turn, four and five axis machining, tombstone and work holding concepts. Prerequisites: MFG-205.

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: MFG-109.

MFG-210 CAM Special Projects

1-4 credits, Not Offered Every Term

Allows students to integrate and improve CNC and CAD/CAM manufacturing skills. Students will be assigned a variety of hands-on projects based on their skill level and interest. Variable Credit: 1-4 credits. May be repeated for up to 4 credits. Required: Student Petition. Recommended: MFG-201 and MFG-204 (May be taken concurrently with MFG-204).

MFG-211 Machine Tool Fundamentals IV

3-6 credits, Fall/Winter/Spring

Concentrates on CNC setup and operation and on surface grinding. Students will develop and apply their machining skills while creating products in a team environment. Additional topics may include fixture design and cutting mechanics. Variable Credit: 3-6 credits. May be repeated for up to 6 credits. Prerequisites: 6 credits of MFG-113. Recommended: MFG-104, MFG-105 and MFG-113.

MFG-219 Robotics

3 credits, Not Offered Every Term

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: MFG-209 and MTH-050.

MFG-221 Materials Science

3 credits, 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: MTH-050.

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: 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: 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.

MTH**Mathematics****MTH-010 Fundamentals of Arithmetic**

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-054 Medication Calculations for Medical Assistants

4 credits, Winter
This course is for students in the Medical Assistant program. Topics include problem solving, accuracy and precision of various systems of measurement, and calculating medication doses. Required: Student must be enrolled in current Medical Assistant cohort. Prerequisites: MTH-020 with a C or better, or placement in MTH-060.

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 credit, 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 credit, 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 credit, 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 credit, 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 credit, 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-105 Math in Society

4 credits, Fall/Winter/Spring/Summer
A transfer-level math course for non-science majors, focused on critical thinking, problem solving, and mathematical communication, and accomplished through the topics of Logical Reasoning and Problem Solving, Probability and Statistics, and Financial Math. Prerequisites: MTH-095 or MTH-098 with a C or better, or placement in MTH-111. Recommended: WRD-098 or placement in WR-121.

MTH-111 College Algebra

5 credits, Fall/Winter/Spring/Summer
A transfer course designed for students preparing for trigonometry, statistics, or calculus. The focus is on the analysis of piecewise, polynomial, rational, exponential, logarithmic, power functions and their properties. These functions will be explored symbolically, numerically and graphically in real life applications and mathematical results will be analyzed and interpreted in the given context. The course will also include transformations, symmetry, composition, inverse functions, regression, the binomial theorem and an introduction to sequences and series. Prerequisites: MTH-095 with a C or better, or placement in MTH-111. Recommended: WRD-098 or placement in WR-121.

MTH-112 Trigonometry and Pre-Calculus

5 credits, Fall/Winter/Spring/Summer
A transfer course designed to prepare students for calculus using an AMATYC standards-based approach utilizing the rule of four to analyze elementary functions and applications. Topics include right-triangle trigonometry, trigonometric functions developed from the unit circle, inverse trigonometric functions, using trigonometry to model and solve applications, trigonometric identities, polar functions, parametric functions, and vectors. Prerequisites: MTH-111 with a C or better, or placement in MTH-112. Recommended: WRD-098 or placement in WR-121.

MTH-211 Fundamentals of Elementary Math I

4 credits, Fall
This course is the first in a sequence of three courses designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Prerequisites: MTH-095 with a C or better, or placement in MTH-111. Recommended: WRD-098 or placement in WR-121.

MTH-212 Fundamentals of Elementary Math II

4 credits, Winter
This course is the second in a sequence of three courses designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Prerequisites: MTH-211 with a C or better. Recommended: WRD-098 or placement in WR-121.

MTH-213 Fundamentals of Elementary Math III

4 credits, Spring
This course is the third in a sequence of three courses designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Prerequisites: MTH-212 with a C or better. Recommended: WRD-098 or placement in WR-121.

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-243 Statistics I

4 credits, Fall/Winter/Spring/Summer
This course introduces students to descriptive statistics, observational studies, experiments, elementary probability, random variables, and sampling distributions. Prerequisites: MTH-105, MTH-111, MTH-112, or MTH-251 with a C or better, or placement in MTH-112 or MTH-251. Recommended: WRD-098 or placement in WR-121.

MTH-244 Statistics II

4 credits, Not Offered Every Term
The tools learned in Statistics II are used for hypothesis tests and confidence intervals for one and two populations, linear regression, inference about regression, and chi-square tests. Prerequisites: MTH-243 with a C or better. Recommended: WRD-098 or placement in WR-121.

MTH-251 Calculus I

5 credits, Fall/Winter/Spring/Summer
Topics and applications of differentiation. This course is the first in a four-term sequence designed for students in science, engineering, or mathematics. It will focus on differential calculus. Prerequisites: MTH-112 with a C or better, or placement in MTH-251. Recommended: WRD-098 or placement in WR-121.

MTH-252 Calculus II

5 credits, Fall/Winter/Spring/Summer
This course is the second in a four-term Calculus sequence designed for students in science, engineering and mathematics. It will focus on integral calculus. Prerequisites: MTH-251 with a C or better. Recommended: WRD-098 or placement in WR-121.

MTH-253 Calculus III

5 credits, Not Offered Every Term
This course is the third in a four-term Calculus sequence. Topics include sequences and series (power, Taylor, MacLaurin), tests of convergence, Taylor polynomials, and multiple integrals using Cartesian, polar, cylindrical, and spherical coordinate systems. Prerequisites: MTH-252 with a C or better. Recommended: WRD-098 or placement in WR-121.

MTH-254 Vector Calculus

5 credits, 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, Spring/Summer
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: WRD-098 or placement in WR-121.

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.

MUP**Music Performance****MUP-100 Individual Lessons: Non-Music Majors**

1 credit, 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 is the 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-Improv

1 credit, 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: 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 is the 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: MUP-102 and MUP-104.

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. Required: Enrollment by audition. Students wishing to register for chamber choir should have experience reading music OR have prior experience singing in choir. If not, the student will agree to take either MUS-117 Sight-reading, MUS-101, 102 or 103 Music Fundamentals or MUS-127, 128 or 129 Keyboard Skills I while registering for Chamber Choir. 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. Required: Students wishing to register for Mainstream should have experience reading music OR have prior experience singing in choir. If not, the student will agree to take concurrently either MUS-117, Sightreading, MUS-101, 102 or 103, Music Fundamentals or MUS-127, 128 or 129 Keyboard Skills I.

MUP-141 College Orchestra

1 credit, 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

1 credit, Fall/Winter/Spring
Studies the development and performance of original compositions through intensive musical collaboration and creation. May be repeated for up to 6 credits. Required: Pass proficiency audition.

MUP-158 Chamber Ensemble

1 credit, 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-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-Impro

1 credit, 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: 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. Required: Students wishing to register for chamber choir should have experience reading music OR have prior experience singing in choir. If not, the student will agree to take concurrently either MUS-117, Sightreading, MUS-101, 102 or 103, Music Fundamentals or MUS-127, 128 or 129 Keyboard Skills I. 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. Required: Students wishing to register for Mainstream should have experience reading music OR have prior experience singing in choir. If not, the student will agree to concurrently take either MUS-117, Sightreading, MUS-101, 102 or 103, Music Fundamentals or MUS-127, 128 or 129 Keyboard Skills I. Prerequisites: MUP-125 (6 credits).

MUP-241 College Orchestra

1 credit, 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 credit, 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).

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-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).

MUS

Music

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: WRD-098 or placement in WR-121.

MUS-106 Audio Recording At Home

1 credit, Fall/Winter/Spring/Summer

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: MTH-095 or placement in MTH-111; WRD-098 or placement in WR-121. 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 credit, 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. Required: First year music majors must take MUS-112 concurrently with MUS-112L, MUS-115, and MUS-128. This requirement does not affect non-music majors. Prerequisites: MUS-111.

MUS-112L Music Notation Software I

1 credit, 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 credit, 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 sol feg 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 sol feg 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 sol feg 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-117 Sightreading

1 credit, Fall/Winter/Spring

Learning to read and sing music by sight. Students will spend time practicing sightsinging, starting with easy exercises and moving to more difficult exercises as the term progresses.

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 C or better in one of the following courses: MUS-117, MUS-131, MUS-132, or MUS-133. 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 credit, 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 credit, 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 credit, 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 credit, 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 credit, 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 credit, 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: Guitar for Dummies

1 credit, 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 credit, Winter

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 credit, 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 credit, 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/Spring

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, Songwriting I. 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.P

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 credit, 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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

MUS-207 Advanced Recording Techniques:**Drums**

1 credit, 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 credit, 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 credit, 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 credit, 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 sol feg 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 sol feg 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 sol feg 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 credit, Not Offered Every Term

This course enables the student to use Ableton LIVE software to create music. Prerequisites: MUS-142.

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

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.

NRS**Nursing****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 life-style 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 life-style 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

3 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

6 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

3 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

6 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, Pathophysiological Processes I 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.

NUR**Nursing****NUR-100 Nursing Assistant I**

7 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 80 hours of didactic and skills lab instruction. May not be challenged. Required: Student Petition. 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 82 hours of clinical practicum. May not be challenged. 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 CastleBranch. Student 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: WRD-098 or placement in WR-121. 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.

NUR-160 Fluid and Electrolytes

2 credits, Not Offered Every Term

Focus of this course is to assist students in the understanding of fluid, electrolytes, acid-base balances and the interpretation of various diagnostic tests related to the client's clinical condition. Limited to healthcare professionals/healthcare students. Prerequisites: BI-233.

NUR-217 Basic EKG Interpretation I

1 credit, Not Offered Every Term

This course presents the student with an introductory overview related to the anatomy and physiology of the heart. It also explores normal electrical conduction as well as common variations as evidenced by changes in the waveform on the cardiac monitoring device. The course will also focus on the student's ability to perform cardiac monitoring via 3, 5 and 12 lead monitoring devices.

NUR-218 Basic EKG Interpretation II

1 credit, Not Offered Every Term

This course builds upon the knowledge gained in NUR-217. The course will focus on the student's ability to understand and recognize variations in the electrical conduction of the heart as evidenced by changes on the 12-lead EKG. The course will encompass the recognition and treatment modalities of sinus, atrial, junctional and ventricular rhythms as well as heart block. Recognition and treatment of electrical conduction problems related to ischemia, injury and drug/electrolyte imbalances will also be discussed.

OST**Occupational Skills Training****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.

PE**Physical Education****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, Not Offered Every Term

The course is designed to provide students the basic understanding and knowledge of psychological skills used to improve physical performance in themselves and/or their peers/teammates. 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-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.

PH**Physics****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.

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.

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.

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-112 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-112 or placement in MTH-251. Recommended: A year of high-school physics or PH-150.

PH-202 General Physics

5 credits, Winter

A lab course covering electricity, magnetism, DC and AC circuits, and electromagnetic radiation. Prerequisites: PH-201.

PH-203 General Physics

5 credits, Spring

A lab course covering thermodynamics, fluids, waves, geometrical optics, wave optics, and modern physics. Prerequisites: PH-202.

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: MTH-254. A year of high-school physics or PH-150.

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: MTH-254.

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.

PHL**Philosophy****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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

PIE**Program for Intensive English****PIE-012 Beginning ESL**

0 credits, Not Offered Every Term

English language learners speak and listen to simple words, phrases, questions, statements and commands using common English vocabulary in simple, highly-structured tasks. Required: Student Petition.

PIE-014 Beginning Reading & Writing

0 credits, Not Offered Every Term

English language learners read and write the alphabet, sight words, and simple sentences. Required: Student Petition.

PIE-016 Integrated Beginning ESL

0 credits, Fall/Winter/Spring/Summer

English language learners are introduced to the basic language necessary to function in day-to-day American society; language functions are taught in the contexts of work, family and community. Required: Student Petition.

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-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-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, Fall/Spring
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, Summer/Winter
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/Summer
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 ESL Reading 1

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 ESL and everyday life. Required: Student Petition.

PIE-063 ESL Reading 2

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 ESL and everyday life. The course can be repeated, as learners read texts of progressively greater challenge, up to the college reading level. Students who have completed ESL Reading 1 develop their reading skills at a higher level in ESL Reading 2. Required: Student Petition.

PIE-067 Spelling

0 credits, Not Offered Every Term
English language learners learn about and practice English spelling patterns and rules and will individualize instruction to address spelling challenges. 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-088 Beginning ESL Computer Skills Lab

0 credits, Fall/Winter/Spring/Summer
English language learners acquire basic computer skills. Required: Student Petition.

PIE-094 TOEFL/TOEIC Preparation

0 credits, Fall/Winter/Spring/Summer
Prepares students for the Test of English as a Foreign Language (TOEFL) and the Test of English for International Communication (TOEIC) by improving listening, grammar, reading and writing skills. It includes familiarization with the test components, test-taking techniques, strategies and computer skills. Required: Student Petition.

PIE-095 PIE Tutoring

0 credits, Fall/Winter/Spring/Summer
English language learners in the Program for Intensive English receive one-on-one instruction in conversation, pronunciation, reading, grammar, writing, or GED preparation. The student meets with a tutor or instructor and work on the above skill areas. Required: Student Petition.

PS**Political Science****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: WRD-098 or placement in WR-121.

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: 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: 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: 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: 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: 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: WRD-098 or placement in WR-121.

PSY**Psychology****PSY-101 Human Relations**

3 credits, Fall/Winter/Spring/Summer
Introduction to interpersonal relationships and human relations in a social context. Includes individual and group activities, lecture, and discussions with an emphasis on student participation. Recommended: WRD-090 or placement in WRD-098.

PSY-110 Psychology: An Overview

4 credits, Not Offered Every Year

A general introduction to the field of psychology. Explores a wide variety of topics. Recommended: WRD-090 or placement in WRD-098.

PSY-200 Psychology As A Natural Science

4 credits, Fall/Winter/Spring

Introduction to physiological psychology, the study of how the nervous system produces behavior and cognition. Further topics will include consciousness, sleep, memory, and language. Recommended: WRD-090 or placement in WRD-098.

PSY-205 Psychology As a Social Science

4 credits, Fall/Winter/Spring

Principles of learning and social psychology, the study of how groups affect the individual. Further topics may include motivation, personality, human development, and stress. Recommended: 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-121.

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-121.

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-121.

PSY-280 Psychology/CWE

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of psychology. Variable Credit: 2-6 credits. Required: Student Petition. Corequisites: CWE-281.

R**Religion****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: 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: 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: WRD-090 or placement in WRD-098.

R-204 History of Christianity

4 credits, Not Offered Every Year

Covers early Christianity, the Apostles, and the development of the New Testament. Examines post-apostolic Christianity, developments through the Middle Ages, Renaissance, Reformation, and the Modern Age. Contemporary topics include Christianity in conflict, ethical and social religious issues, and the face of contemporary Christianity. Recommended: 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: 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: 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: 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.

RET**Renewable Energy Technology**

For additional information, contact the Industrial Technology Department at 503-594-3318.

RET-200 Renewable Energy Systems

4 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: 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-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.

SAR**Search and Rescue****SAR-102 Rescue Craft: Systems, Knots, and Anchors**

2 credits, Not Offered Every Term

This course covers an introduction to basic components of a rope rescue system. The course presents common rescue skills, current technology, and identification of risk factors in rope rescue. It covers proper application and use of common rescue equipment to limit risk. Understanding advantages and disadvantages of anchors and anchors systems for single person and rescue loads is also covered. Students will get in-class, hands-on experience with knot craft, mechanical advantage systems as well as natural and artificial anchors. This course meets the requirements for NFPA Firefighter 1-Rope and Knots as well as DPSST Course Number: 15F042/17F019.

SAR-103 Rappelling and Self Rescue

1 credit, Not Offered Every Term

The course covers the skills and techniques required to safely leave a vertical realm in an emergency. Students will be introduced to rappelling, self and partner rescue in sport climbing which includes planning and anticipating potential challenges throughout the rescue. Students will learn the skill and technique differences between personal and partner rescue through theoretical and hands-on practice in several systems.

SAR-201 Technical Rope Rescue: Operations Level

1 credit, Not Offered Every Term

This course provides students with the fundamentals of rope rescue in the low-angle environment. Students learn and practice skills pre-planning and size-up of rope rescue operations, knots, anchor systems, belay operations, ascending and descending lines, mechanical advantage systems, patient packaging & litter attending. Students learn how to safely navigate low-angle or over-the-bank rescue situations and assist rescuers in high-angle environments. Completion of the TRR:OL class satisfies the requirements in NFPA 1670 and 1006 for Technical Rope Technician level training and is recognized by Oregon DPSST. Recommended Prerequisite Or Corequisite: SAR-102.

SAR-202 Technical Rope Rescue: Technician Level

2 credits, Not Offered Every Term

This course is designed to take students from basic over-the-bank rescues to progressively more vertical scenarios. Students learn and practice such skills as preplanning, size-up and scene management, ascending and descending, belaying, mechanical advantage systems, lowering and raising systems, patient packaging and litter attending, tethers, and highlines. Completion of the TRR:TL class satisfies the requirements in NFPA 1670 and 1006 for Technical Rope Technician level training and is recognized by Oregon DPSST. In addition, Technician level training is mandatory for inclusion on many Federal Emergency Management Agency Teams at different levels. Recommended: SAR-102 and SAR-201.

SAR-203 Technical Rope Rescue: Advanced/Specialist

2 credits, Not Offered Every Term

This course is for rope rescue team members who already have completed a comprehensive basic training and want to continue to specialize. This training continues where the introductory course finishes. This course examines advanced technical solutions. It elaborates on the use of multi-pods, monopod and A-frames, various configurations of steep, diagonal and horizontal spans, the use of multiple track lines in high-line operations, industrial lead climbing, loads and forces, incident management and scenario training. This training is consistent with NFPA 1670 and 1006 standards for technician level. Prerequisites: SAR-202.

SAR-204 Safe Work At Heights and Coworker Rescue at Heights

1 credit, Not Offered Every Term

The course teaches participants to deal with a colleague who has fallen and is hanging helplessly in their fall protection system. Using simple techniques and industry standard equipment, students will learn how a colleague can be freed from a dangerous situation after they have dropped into their fall arrest system. The rapid release of this trapped person must be the student's highest priority, to prevent further injury. In accordance with the law on working conditions and the consequent duty of care, an employer is required to prepare employees for this possible scenario. Generally, with a few simple tools, this problem can easily be solved.

SBM**Small Business Management**

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-025 Succession Planning

0 credits, Fall

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-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.

SM**Microelectronics Systems Technology**

Courses listed with the SM prefix and courses listed in the Electronics Systems Technology section with the EET prefix are the main core classes for the Microelectronics Systems Technology program. 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: SM-150.

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: 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: 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: 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.

SOC**Sociology****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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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.

SPN**Spanish****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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: SPN-203.

SPN-213 Intermediate Spanish Conversation

3 credits, Not Offered Every Term

Continues improving intermediate-level Spanish conversation through the discussion of readings and situations related to selected special topics. Spanish culture related to the topics will be included. Simulated role plays are 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. The topic of the course varies from term to term. Required: Basic knowledge of the Spanish language. Prerequisites: SPN-203 or SPN-211 or SPN-212 or Student Petition.

SSC**Social Science****SSC-160 Faith & Reason**

5 credits, Not Offered Every Term

Introduction to classical philosophy, sacred texts, modern fiction, poetry, theology, evolutionary biology, and cosmology. Consideration of how personal concepts of faith and reason and institutions of science and religion, shape personal intellectual landscapes. Recommended: WRD-090 or placement in WRD-098.

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. Recommended: WRD-090 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

TA**Theatre Arts****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: WRD-098 or placement in WR-121.

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: TA-101 and WRD-098 or placement in WR-121.

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: WRD-090 or placement in WR-121. 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: TA-121.

TA-141 Acting I

4 credits, Fall
Studies the methods, techniques and theories of acting as an art form. Performance of lab exercises and monologues/scenes from published dramatic literature with written assignments to include response and analysis papers. Introduction to vocal, physical, and script analysis skills. Recommended: WRD-098 or placement in WR-121.

TA-142 Acting II

4 credits, Winter

Further studies the methods, techniques and theories of acting as an art form. Performance of lab exercises and monologues/scenes from published dramatic literature with written assignments to include response and analysis papers are the basic teaching approaches. Special focus on script analysis and language skills. Recommended: TA-141 and WRD-098 or placement in WR-121.

TA-143 Acting III

4 credits, Spring

An in-depth study of the methods, techniques, and theories of acting as an art form. Performance of lab exercises and monologues/scenes from published dramatic literature with written assignments to include response and analysis papers are the basic teaching approaches. Focus on movement and character creation. Recommended: 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: 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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: WRD-098 or placement in WR-121.

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: 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.

TTL**Transportation & Logistics****TTL-101 Introduction to Professional Truck Driving & Logistics**

1-8 credits, Fall/Winter/Spring/Summer

Introduction to logistics and commercial vehicle operation, covering control systems, coupling procedures, cargo handling and pre-trip inspections. Covers regulations and requirements for CDL, speed management, road conditions, and accident scene management. Variable Credit: 1-8 credits. Corequisites: TTL-121.

TTL-121 Practical Applications in Professional Truck Driving & Logistics

1-8 credits, Fall/Winter/Spring/Summer

Demonstration of skill development related to safe commercial vehicle operation. In-depth coverage of logistics, business processes and communication skills development. Covers delivery basics, including backing, visual search, shifting, turning, space and speed management. Variable Credit: 1-8 credits. Corequisites: TTL-101.

TTL-141 Transportation Customer Service Skills

1-3 credits, Spring

Focuses on building necessary skills for outstanding customer service, including effective listening, conflict resolution, and communication. Identify internal and external customers, learn how to handle potentially unproductive interactions, and create positive experiences for all customers. Variable Credit: 1-3 credits.

TTL-180 Transportation & Logistics/CWE

1-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience in the Transportation & Logistics field. Supervision and evaluation of the student's job performance will be provided by qualified staff of the college and employer. Variable Credit: 1-6 credits. Required: Student Petition. Corequisites: CWE-281.

UAS**Uncrewed Aircraft Systems****UAS-201 Drone Operations Basics: FAA Part 107**

3 credits, Not Offered Every Term

This course will prepare students to take the Part 107 Aeronautical Knowledge Test to become a commercial uncrewed aircraft systems (UAS) pilot. It will cover topics such as: rules and regulations, aerodynamics, navigation, airspace and weather. This course will provide hands-on training for drone operations, including system fundamentals, safety procedures, hazard recognition and air crew performance.

UAS-205 Practical Drone Applications

2 credits, Not Offered Every Term

This course will provide the opportunity for students to develop and implement a real-world drone project, such as: geographic data collection, aerial photography and videography; real-time aerial observation and other uncrewed aircraft systems (UAS) applications.

WET**Water & Environmental Technology****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.

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 credit, 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. Prerequisite or Corequisite: CWE-281.

WLD**Welding Technology****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, stick, wire feed and TIG welding, oxy-acetylene and plasma arc cutting.

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)

2-8 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. Variable Credit: 2-8 credits.

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)

1-8 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. Variable Credit: 1-8 credits.

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)

1-8 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. Variable Credit: 1-8 credits.

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-acetylene welding, brazing, cutting, stick welding, wire feed, oxy-fuel and plasma cutting. Includes: safety, electrical fundamentals, routine maintenance, minor repairs, and 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) process 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, and groove welds on pipes in all positions. Prerequisites: WLD-111, or WLD-111A and WLD-111B, and WLD-150 or prior experience in SMAW.

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

2-4 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. Variable Credit: 2-4 credits. 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: MFG-103 or MFG-111; and 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-270 Certified Welding Inspector (CWI) Study

4 credits, Not Offered Every Term

This course provides the instruction and guidance needed for students to apply, study for, and take the AWS CWI exam. A list of study materials, reading assignments, and quizzes will be covered for all three portions of the exam, along with the tools and weld samples used in the practical portion of the exam. Required: Student Petition. Recommended: At least one year of welding experience.

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.

WR**Writing****WR-101 Communication Skills: Occupational Writing**

3 credits, Fall/Winter/Spring/Summer

Develops basic modes of technical writing, including summaries, process analysis, instructions, and reports. Prerequisites: WRD-098 or placement in WR-121.

WR-121 English Composition

4 credits, Fall/Winter/Spring/Summer

Introduces the academic essay. Students learn to use a writing process, from brainstorming to polishing, as they develop original responses to challenging articles and academic essays. The class emphasizes information literacy: how to find and evaluate source material, as well as integrate and cite it. Prerequisites: WRD-098 or placement in WR-121.

WR-122 English Composition

4 credits, Fall/Winter/Spring/Summer

This class examines the major principles of argumentation and persuasion including analyzing and writing persuasive essays and visual texts in addition to finding, using, and documenting sources. Prerequisites: WR-121 with a C or better.

WR-127 Scholarship Essay Writing

1 credit, 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 credit, 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-121 with a C or better.

WR-140 Introduction to Writing Creatively

4 credits, Not Offered Every Term

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: WRD-098 or placement in WR-121.

WR-148 Self-Publishing: Design and Layout

1 credit, Spring

This course will offer a hands-on approach to using book design software. The goal of this class is to introduce students to design, layout, and marketing techniques that will enable them to publish their own material.

WR-149 Introduction to Blogging

2 credits, Winter/Spring

In this course students will learn the history, terminology, and tools of blogging -- online writing on a specific subject arranged in reverse chronological order. Students will create, maintain, and promote their own blogs on subjects of their choice using the free WordPress platform. They will read and comment on each other's blogs, as well as follow and interact with influential professional blogs. The course will introduce how to self-host and monetize a blog, but doing so is not a requirement.

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 learn to conduct thorough and creative research using a variety of tools and emphasizing scholarly sources. Prerequisites: WR-122.

WR-227 Technical Report Writing

4 credits, Fall/Winter/Spring/Summer

Introduction to report and proposal writing, focusing on organization, form, and style. Emphasis on materials gathered from professional fields such as medicine, nursing, dentistry, government, criminal justice, business, engineering, technology, science, and public relations. The course prepares students to produce clear, informative, and persuasive documents. The purpose and target audience influence choices about how information is presented including writing style, document layout, vocabulary, sentence and paragraph structure, and visuals. The course is grounded in rhetorical theory and focuses on producing usable, user-centered content that is clear, concise and ethical. Prerequisites: WR-121 with a C or better.

WR-240 Introduction to Creative Writing: Nonfiction

4 credits, Not Offered Every Term

Techniques of writing and analyzing types of creative nonfiction such as literary journalism, memoirs, nature or science writing, and personal essays. Prerequisites: WRD-098 or placement in WR-121.

WR-241 Introduction to Creative Writing: Fiction

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-121.

WR-242 Creating Writing: Poetry

4 credits, Fall/Winter
Provides the basic skills for writing and revising poems following contemporary trends in form and content and the critical abilities to read and discuss poems confidently. Prerequisites: WRD-098 or placement in WR-121.

WR-243 Creative Writing: Playwriting

4 credits, Not Offered Every Term
Designed for students who wish to learn the technique of playwriting, including the art of dialogue and the elements of dramatic structure. Recommended: WRD-098 or placement in WR-121.

WR-244 Advanced Fiction Writing

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 Advanced Poetry Writing

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/Spring
For students with an interest in creative writing and/or literary journal design, layout, and publication who wish to develop editing and publishing skills. Includes the production of a literary journal. May be repeated for up to 8 credits. Recommended: WRD-098 or placement in WR-121.

WR-247 Advanced Playwriting

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. This course may be repeated for up to 8 credits. Prerequisites: WR-243 or Student Petition.

WR-248 Bookmaking: Design and Layout

4 credits, Fall/Winter
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: WR-121.

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. Recommended Prerequisite Or Corequisite: WR-121.

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 4 credits. Prerequisites: WRD-098 or placement in WR-121.

WR-263 Advanced Screenwriting

4 credits, Not Offered Every Year
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 out options for production of their work. May be repeated for up to 8 credits. Prerequisites: WR-262 or Student Petition. Recommended: WRD-098 or placement in WR-121.

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. Prerequisites: WR-121.

WR-268 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, and poetry. Prerequisites: WRD-098 or placement in WR-121.

WR-270 Food Writing

4 credits, Fall
Learn to write uniquely and powerfully about food, from reviews to memoir and personal narrative. Bring the pen to the plate and vice versa, enriching your appreciation for sustenance and sentences at the same time. Recommended: WRD-098 or placement in WR-121.

WRD**Writing-Reading Skills****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

5 credits, Fall/Winter/Spring/Summer
This course is the foundation for college-level reading and writing. Students will develop vocabulary skills and apply reading strategies to fiction and non-fiction texts to gain information for various purposes. Writing processes will be introduced and improved to create a simple academic text. Prerequisites: Placement in WRD-090.

WRD-098 Introductory Reading & Writing 2: College Preparation

4 credits, Fall/Winter/Spring/Summer
This course builds on the basic reading and writing skills covered in WRD-090 and prepares students to be successful in WR-121, college-transfer-level composition. Students will read shorter college-level texts and create short essays responding to them. Topics include how to follow a writing process, perform basic research, work in a writing group, and reflect on one's own learning. Prerequisites: WRD-090 or placement in WRD-098.

WS**Women's Studies****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: WRD-098 or placement in WR-121.

XATH**Workshop: Theatre Arts****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.

XCIV**Workshop: Citizen Preparation****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.

XMFG**Workshop: Manufacturing****XMFG-C017 Introduction to Mastercam**

1.5 CEU, Fall/Winter/Spring/Summer
This course teaches the basic understanding of Mastercam and focuses on basic knowledge needed to use Mastercam. Students will use the software to generate basic parts for manufacturing. Topics covered include model creation, process verification, and relevant tool path strategies.

XWET**Workshop: Water & Environmental Technology****XWET-C001 1-Day Cross Connection Specialist Update**

0.6 CEUS, Not Offered Every Term
Update on code information or any changes in the program.

XWET-C002 1-Day Tester Renewal

0.6 CEUS, 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

1.2 CEU, 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

3.2 CEU, 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

4.0 CEU, 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

2.3 CEU, Not Offered Every Term
Offerings include: Management & Supervision, Basics, Health & Safety, Technology, Operations, Distribution & Maintenance, Lab, Biosolids, Source Control.

XWET-C008 Waterworks School

2.0 CEU, Not Offered Every Term

Offerings include: Management and Supervision, Water Quality and Treatment, Distribution and Maintenance, Waterworks Basics, Customer Service and Safety.

XWET-C011 Aquatic Microbiology

1.4 CEU, Not Offered Every Term

Workshop covering microscope use and slide making, basic bacterial shapes, aseptic techniques, Gram and Neisser staining and slide making, bacterial filamentous organism id, common protozoa and protozoa analysis, wastewater plant microbiological characteristics, operation based on plant microbiology, microbiology of aeration basic, influent and effluent.

XWET-C170 Math for Wastewater Operators

0.4 CEUS, Not Offered Every Term

Math skill building and preparation for problem solving in the wastewater industry.

XWLD**Workshop: Welding****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.

Z**Zoology****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-111. Recommended: WRD-098 or placement in WR-121.

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-111. Recommended: WRD-098 or placement in WR-121.

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-111. Recommended: WRD-098 or placement in WR-121.



Faculty & Administration

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BOARD OF EDUCATION

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Jane Reid	2021
Betty Reynolds	2023
Rob Wheeler	2021

CLACKAMAS COMMUNITY COLLEGE
PRESIDENT
DR. TIM COOK

2020-2021

FACULTY & ADMINISTRATION

Albers, Richard (2008)
Computer Science
MS University of Arkansas
BS University of Arkansas
AAS Parkland Community College

Andersen, David (1997)
Art
MFA Brigham Young University

Anderson, Jennifer (2018)
Associate Dean, Enrollment and Student Services
EdD Portland State University

Ash, Karen (2017)
Director, Financial Aid
MBA Webster University

Baratto, Stefan (2000)
Mathematics
MS University of Oregon
BGS University of Michigan

Bare, Dustin (2011)
Director, Student Academic Support Services
MA Concordia University

Bates, Dustin (2014)
Welding
AAS Clackamas Community College

Bjerre, Irma (2000)
World Languages
MA University of Nevada
BA University of Nevada

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

Brought, Marilyn (2018)
Health Sciences
BS Montana State University

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

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)
Grants Administrator
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

Chang, John (2019)
Executive Director, Foundation
BS University of Oregon
MA Western Seminary

Chastain, April (2015)
Horticulture
MURP Portland State University
BS North Carolina State University

Clarke, Jaime (2015)
Director, Office of Education Partnerships
MA Gonzaga University

Cochran, Paul "Bob" (2010)
Dean, Campus Services
BS Portland State University

Coffey, Amanda (1998)
English
MFA Arizona State University
BA Virginia Commonwealth University

Corona, Francisco (2016)
Business
MS Washington State University

Davidson, Lisa (2016)
Connections with Business and Industry
PhD 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

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

Eikrem, James “Jim” (2012)*Theatre Arts*

MFA New York University

Ellis, Amy (2016)*World Languages*

ME Lewis and Clark College

Ennenga, Jeff (2016)*Wildland Fire & Forest Management*

BS University of Alaska Anchorage

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

Furno, Sharron (2015)*Criminal Justice*

MS Capella University

BS Siena Heights University

Gilbert, Jarett (2016)*Associate Dean, Technology, Applied
Science and Public Safety*

MA New York University

BA Franklin University

Ginsburg, John (2015)*Director, Student Leadership & Engagement*

JD St Louis University

Goff, Pahl “Matt” (2017)*Business & Industry Training Manager*

MET Boise State University

BA Northwest Christian University

Goff, Susan “Sue” (2014)*Dean, Arts & Sciences*

PhD Oregon State University

MBA Portland State University

BS Oregon State University

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

Hamel, Nicolas (1999)*Science*

PhD Portland State University

BS Oregon State University

Hedges, Vicki (2008)*Director, Human Resources Operations*

BS Portland State University

Helm, Lloyd (2013)*Director, Campus Services***Hendricks, Dawn (2012)***Early Childhood Education & Family Studies*

EdD Pepperdine University

MA Portland State University

BA Portland State University

Hodgson, Shalee (2018)*Associate Dean, Technology, Applied
Science and Public Services*

MBA Marylhurst University

BS North Dakota 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

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

Hull, Mark (2010)*Mathematics*

MS Oregon State University

BS Portland State University

Hutson, Jeremy (2018)*Health Sciences*

MS St. Xavier University

BS Oregon Health and Science University

AAS Clackamas Community College

John, Jeff (1991)*Custodial Supervisor***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

Kandratieff, Peter “Pete” (2001)*Campus Safety Manager*

BS Portland State University

Kilders, Frank (2016)*Horticulture*

BA Technical College of Wiesbaden

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

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

BS Cortland College

Landeen, Thomas “Tom” (2011)*Automotive*

ASE Certified Master Automobile

Technician

L1 Advanced Engine Performance Specialist

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
- Lewis, Eric (1993)**
Psychology
PhD University of Nevada
BA California State University, Fullerton
- Littlefield, Jane (2015)**
Library
MA Saint Mary's University
MLIS Dominican University
- Locke, Wesley "Wes" (1998)**
Manufacturing Technology
AS Clackamas Community College
- 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
- Mach, Susan (1997)**
English
MA Boston University
BA Pacific University
- Mahar, Alissa (2016)**
Vice President, College Services
MS Portland State 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
- 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
Health, 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
- Miller, Nick (2003)**
Automotive Technology
AAS Clackamas Community College
- Moiso, Michael (2014)**
Business
JD Willamette University
- Montgomery, Kelly (2014)**
Manager, Custodial Services
- Morris, Sarah (2004)**
Nursing
MS University of Portland
BSN Oregon Health & Science University
AAS Portland Community College
- Mount, David (1992)**
English
MA University of California, Los Angeles
BA California State University, Fullerton
- Mulligan, Bruce (2016)**
Welding
AS Connelly Skill Learning Center
- Munro, Suzanne (1998)**
English as a Second Language
MA Fuller Theological Seminary
MA San Francisco State University
BA Westmont College
- Nelson, Tracy (2004)**
Health, Physical Education & Athletics
MS Portland State University
BS University of Portland
- Nelson Lewis, Alice (2003)**
Communication Studies
MA Portland State University
BA Portland State University
AA Seattle Central Community College
- Nguyen, Lisa Anh (2017)**
Director, Institutional Research and Reporting
MS University of California, Irvine
- 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
- Nordstrom Hull, Rhonda (2003)**
Mathematics
MS Portland State University
BS Oregon State University
AS Clackamas Community College
- 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, Sharon (2007)**
Business
MS Florida International University
MBA Florida Atlantic University
BS University of Nevada, Las Vegas
- Pasewald, Russel "Russ" (2019)**
Manufacturing
BS University of Phoenix
- 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
- Pruyn, Scot (2014)**
Mathematics
MA University of Kansas
BSE University of Kansas
- Putnam-Hernandez, Ernesto (2018)**
World Languages
MA St. Michael's College
BA University of Vermont
- Reilly, Nicole (2002)**
Nursing
MN University of Washington
BSN Clemson University
- Reynolds, Lisa (2017)**
Associate Dean, Arts and Sciences
PhD Binghamton University

- Rhoden, Josh (2006)**
Head Wrestling Coach
 Health, Physical Education & Athletics
 MA Pacific University
 BA Pacific University
 AA Clackamas Community College
- Richardson, Melissa (2019)**
Chief Human Resources Officer
 BA University of California
- Risan, Cynthia (2010)**
Dean, Technology, Health
Occupations & Workforce
 MS Capella University
 BA University of Idaho
- Rose, Brian (2005)**
Music Technology
- Rosenberg, Larry (2018)**
Service Desk Manager
- Rosevear, Nicole (2015)**
English
 MFA Bennington College
- San-Claire, Joan (2016)**
Business
 PhD University of Mexico
- Sanchez, Camilo (2005)**
Skills Development
 BA Mexico State
- Schaefer, Stephanie (2012)**
Counseling
 PsyD Pacific University
 MA Pacific University
 BS University of Oregon
 Licensed Clinical Psychologist, CADC
- Schulz, Polly (2007)**
Biology
 MS University of Oregon
 BA University of Oregon
- Scott, Laurette (2014)**
Education
 MAT Lewis & Clark College
 BA University of Oregon
- Sexton, Esther (2018)**
Counseling
 PsyD Pacific University
 MA Pacific University
 BA University of Texas at San Antonio
- Shaffer, Jeffrey “Jeff” (2017)**
Dean, Business Services
 BS Linfield College
- Simmons, Bruce (2006)**
Mathematics
 MS University of Minnesota
 BS Duke University
- Sims, Casey (2007)**
Counseling
 MS Portland State University
 BA Willamette University
- Smith, Alan (2016)**
Skills Development
 BS Oregon State University
- Smith, Vicki (2006)**
Major Gifts Officer
- Smith, Yvonne (2006)**
Education & Human Services
 MSW Portland State University
 BS University of Oregon
 Licensed Clinical Social Worker, LCSW
- Sonoff, Thomas “Tom” (2018)**
Director, College Safety
 MA Azusa Pacific University
 BS Azusa Pacific University
 AS Rio Hondo College
- Sprehe, Tara (2001)**
Dean, Academic Foundations and
Connections
 MS Miami University
 BA University of Oregon
- Sweet, Chris (2014)**
Registrar/Enrollment Services Operations
Manager
 MS Portland State University
 BS Pacific University
- Thorn, Carol (2002)**
Nursing
 MS University of Portland
 BS Oregon Health & Science University
- Tourney, Diana (2018)**
Small Business Development Center
 MA Webster University
 BS Regis University
- Tracy, Michelle “Shelly” (2007)**
Director, Utility Training Alliance &
Apprenticeships
 BS Marylhurst University
 AGS Clackamas Community College
- Urbassik, Andrea “Dru” (2015)**
Director, Curriculum and Scheduling
 BS ITT Technical Institute
- Van Riper, Wryann (2016)**
Automotive
 Vocational Certificate Clark College
- Vanderwerf, Tamera (2016)**
Nursing
 BS University of Portland
- Vergun, Andrea (2012)**
English as a Second Language
 MA Portland State University
 BS San Francisco State University
- Wanner, Paul (1992)**
Customized Training
 AGS Clackamas Community College
 AAS Clackamas Community College
 State of Oregon Vocational Certificate
 ASME Certified Senior GDT Professional
 Certified Production Technician AE
 Certification
- Warren, Matthew (2015)**
English
 MS Portland State University
 BS Portland State University
- Wasson, Thomas (2008)**
Art
 MFA University of Hawaii
 BFA University of Hawaii
- Wentworth-Plato, James (2019)**
Horticulture
 BS University of Vermont
- Whitten, Christopher “Chris” (2006)**
Theatre Arts
 BS Western Oregon University
- Yannotta, Mark (1998)**
Mathematics
 PhD Portland State University
 MA University of Missouri
 BSE Southeast Missouri State

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