Catalog

2016
2017

Clackamas
Community College

Education That Works

Clackamas Community College

Welcome to Clackamas Community College!

With an education from CCC, you can go anywhere. CCC is a great place to start your journey toward becoming a nurse, starting your own business or advancing in your current career. I'm a proud member of the class of 1982 and wouldn't be the college's president today without my start at CCC.

If a four-year degree is your goal, Clackamas Community College is an affordable jumpstart to your university education. CCC students can save more than $8,000 their first two years of school. Over the last 10 years, 77 percent of our two-year graduates have gone on to four-year colleges.

Need training for a new job? The college offers training in growing fields like renewable energy, medical assistance and digital multimedia communication. You could be job-ready in two years or less. According to recent data, 87 percent of our certificate recipients found employment, a vast majority within six months of graduation.

CCC can also help you grow in your existing career with our professional development courses. Learn leadership and supervisory skills, project management and more. We can even bring tailored training to your business.

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

President Joanne Truesdell
CCC, Class of '82

2016-2017 Academic Calendar

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

SUMMER TERM 2016

Classes Begin	Monday, June 20
Independence Day holiday (College closed)	Monday, July 4
Labor Day holiday (College closed)	Monday, September 5
Term ends	Saturday, September 3

FALL TERM 2016

In-Service week (College closed Wednesday)	September 19–23
Classes begin	Monday, September 26
Veterans' Day holiday (College closed)	Friday, November 11
Thanksgiving holiday (College closed)	Thurs.–Fri., November 24–25
(Wednesday evening classes, beginning at 4 p.m. or later, are canceled prior to Thanksgiving.)	
Finals week	Mon.–Sat., December 5–10
Term ends	Saturday, December 10
Winter Break (College closed)	Fri., Dec. 23 & Mon., Dec. 26
New Year's Day holiday (College closed)	Monday, January 2

WINTER TERM 2017

Classes begin	Monday, January 9
Martin Luther King Jr. holiday (College closed)	Monday, January 16
Presidents Day (College closed)	Monday, February 20
Skills Contest	Thursday, February 23
(Day classes canceled at the Oregon City campus only. Evening classes, beginning at 4 p.m. or later, held as scheduled.)	
Finals week	Mon.–Sat., March 20–25
Term ends	Saturday, March 25
Spring Break	March 27–31

SPRING TERM 2017

Classes begin	Monday, April 3
Memorial Day (College closed)	Monday, May 29
Finals week	Mon.–Sat., June 12–17
GED & Adult High School Diploma Graduation Ceremony	Thursday, June 15
College Certificate & Degree Graduation Ceremony	Friday, June 16
Term ends	Saturday, June 17


2015 LINEUP
6/25
7/9
7/30
8/23
9/10
10/4
Let yourself in.
NIEMEYER CENTER

Table of Contents

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 revisons in the information contained here without prior notice.

Clackamas At A Glance

www.clackamas.edu

Education That Works

Clackamas Community College

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.

Core Themes

Our core themes describe the essential elements of our mission fulfillment. They are:

- **Academic Transfer** – We provide education that results in successful academic transfer to a four-year institution.
- **Career and Technical Education** – We provide education and training that reflect the economic needs of the community and region and lead to successfully attaining employment.
- **Essential Skills** – We provide education that supports high school completion and learning English, and develops essential skills such as mathematics, reading and writing.
- **Lifelong Learning** – We provide diverse special events, enrichment programs, and continuing education opportunities and develop strong partnerships with our community agencies.

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.)

Philosophy

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.

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 that 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 life-style 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. Core Themes adopted in 2011.

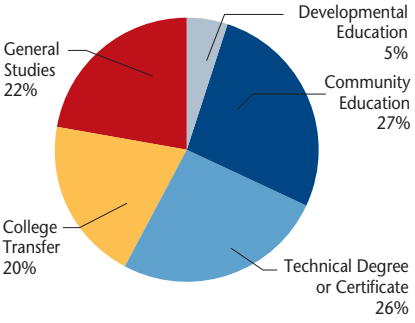
2014-2015 Enrollment Statistics

Headcount	25,793
Fall Full-time students	2,849
Fall Part-time students	5,949
Fall Non-credit students	2,906
Full-time Equivalence	7,071.69
Average age, all students	32
Average age, full-time students	25
Known Females	10,699 (49%)
Known Males	10,939 (51%)
Racial/ethnic known minorities in student body	23%
Degrees/certificates awarded	1,547

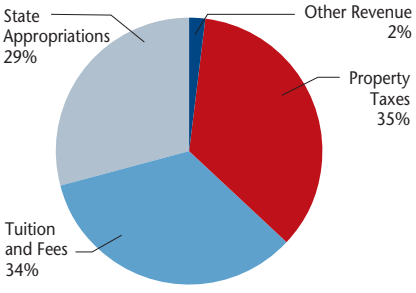
For more information on these and other college statistics, contact the Office of Institutional Research & Reporting at 503-594-6140.

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

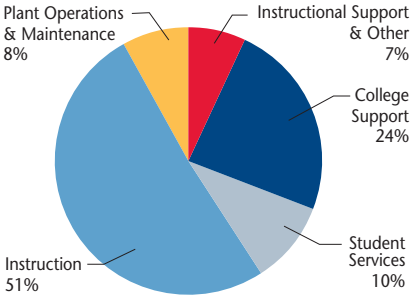
Enrollment Breakdown by Student Program 2013-2014



Revenue - General Fund



Expenditures - General Fund



CCC at a Glance

Numbers reflect 2014-15 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 384,697 (2014 Census)
District (83%) = 319,298 (2014 Census)

Enrollment

2014-15 Head count: 25,793

2014-15 Full-time Equivalence: 7,071

Programs

Career Technical: CCC offers 108 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. Joanne Truesdell

Board of Education
Ron Adams
Jean Bidstrup
Greg Chaimov
Chris Groener
Dave Hunt
Richard Oathes
Jane Reid

Departments and Offices

College Main Number: 503-594-6000

BLDG.*	DEPARTMENT/OFFICE	PHONE
	ABE/GED	
D	Oregon City	503-594-3027
H	Harmony	503-594-0633
D	Adult High School Diploma – Oregon City	503-594-3233
	Academic Advising	
CC	Oregon City	503-594-3475
H	Harmony	503-594-0623
W	Wilsonville	503-594-0959
	Bookstore	
M	Bookstore—Oregon City	503-594-6500
H	Bookstore—Harmony	503-594-0647
	Testing/Assessment Center	
RR	Oregon City	503-594-3283
H	Harmony	503-594-0636
W	Wilsonville	503-594-0940
RR	Admissions & Recruitment/Welcome Center	503-594-3284
CC	Advanced College Credit	503-594-3208
T/W	Apprenticeship	503-594-3031
C	Arboriculture	503-594-3292
CC	Army Strong	503-594-6215
AC	Art	503-594-3034
R	Athletics	503-594-3043
B	Automotive	503-594-3046
S	Business	503-594-3071
OIT	Business Development Center	503-594-0738
B	Business Office	503-594-3085
CC	Cafeteria	503-594-6091
M	Campus Safety Office	503-594-6650
RR	Campus Tours	503-594-6249
CC	Career Services	503-406-8758
CC	Career Planning	503-594-3475
B	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	503-594-3337
H	Community Education	503-594-0627
	Community Garden	503-594-3041
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
C	Criminal Justice/Corrections/Emergency Management	503-594-3203
DJ	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
C	Early Childhood Education & Family Studies	503-594-3203
C	Education	503-594-3203
B	Electronics & Microelectronics	503-594-3318
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

** Find building code key on campus map page.*

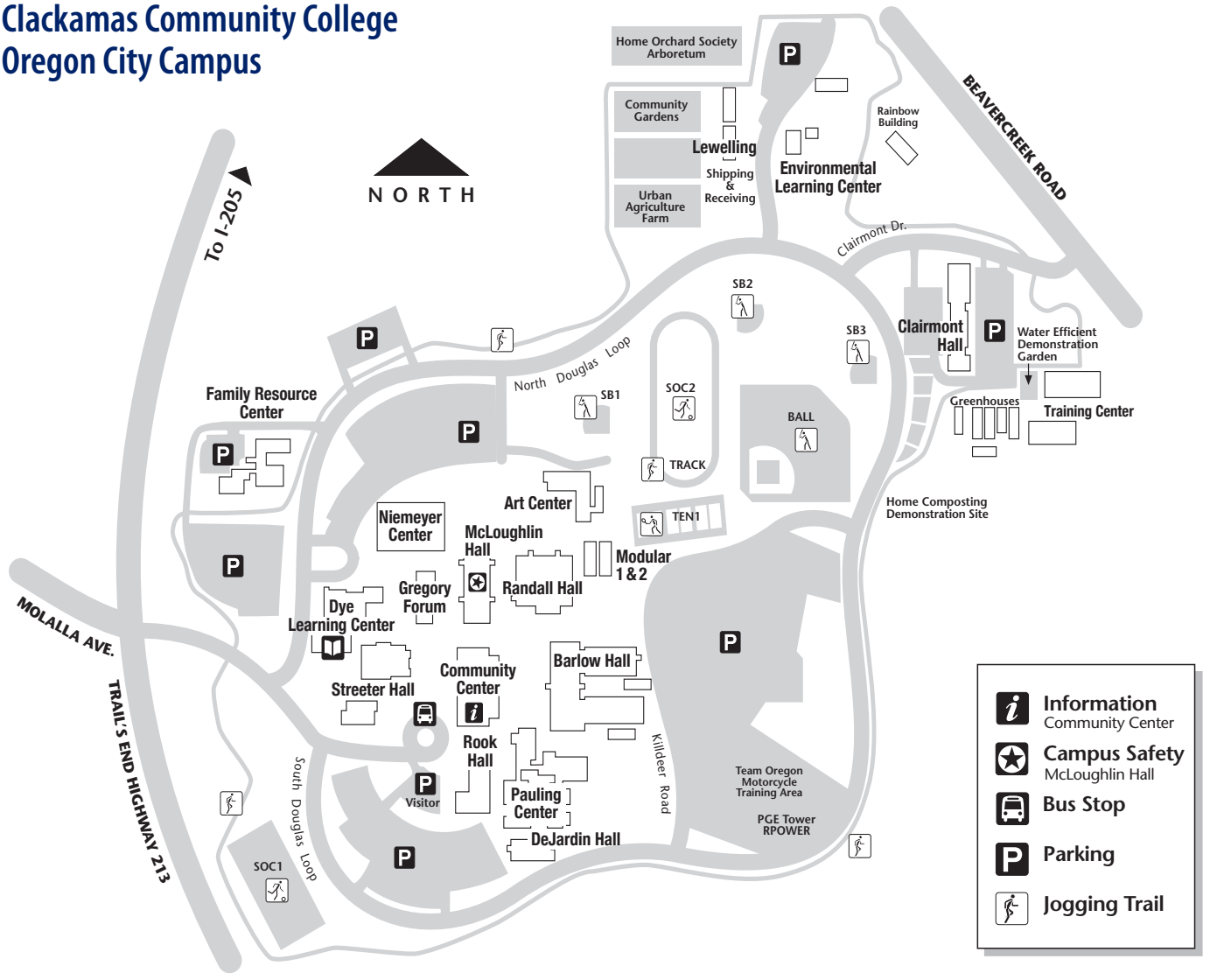
BLDG.*	DEPARTMENT/OFFICE	PHONE
RR	Enrollment Services	503-594-6100
ELC	Environmental Learning Center	503-594-3318
C	Environmental Safety & Health	503-594-3318
G	Facility Scheduling	503-594-3308
RR	Financial Aid Office	503-594-6100
T	Fire Science (Wildland Fire)	503-594-3203
C	Gerontology	503-594-3203
B	GIS	503-594-3318
CC	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 Plus	503-594-3220
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	503-594-3312
CC	Life & Career Options	503-594-3176
B	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
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
B	Renewable Energy Technology	503-594-3318
RR	Scholarship Office	503-594-3421
P	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
B	Technical Career Programs	503-594-3441
N	Theater/Performing Arts	503-594-3153
CC	Tutoring Services	503-594-3070
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
T	Wildland Firefighting	503-594-3203
W	Wilsonville Registration/Information	503-594-0940
F	Workforce Development Services	503-594-6246
M	World Languages *(formerly Foreign Languages)*	503-594-3403
D	Writing Center	503-594-6275

Campus Safety

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

Campus Safety Office, ext. **6234** or **6650** or call **971-563-0101**.

Clackamas Community College
Oregon City Campus



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
M	McLoughlin Hall
MOD1&2	Modulars
N	Niemeyer Center
OIT	CCC at Harmony Community Campus
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 S.E. 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

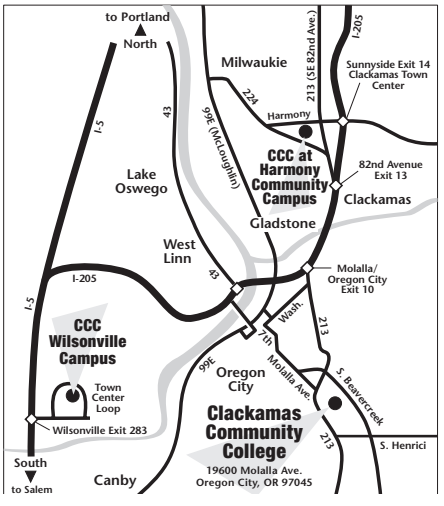
CCC OFF-CAMPUS SITES

Canby Applied Technology Center
721 S.W. Fourth St., Canby, OR 97013

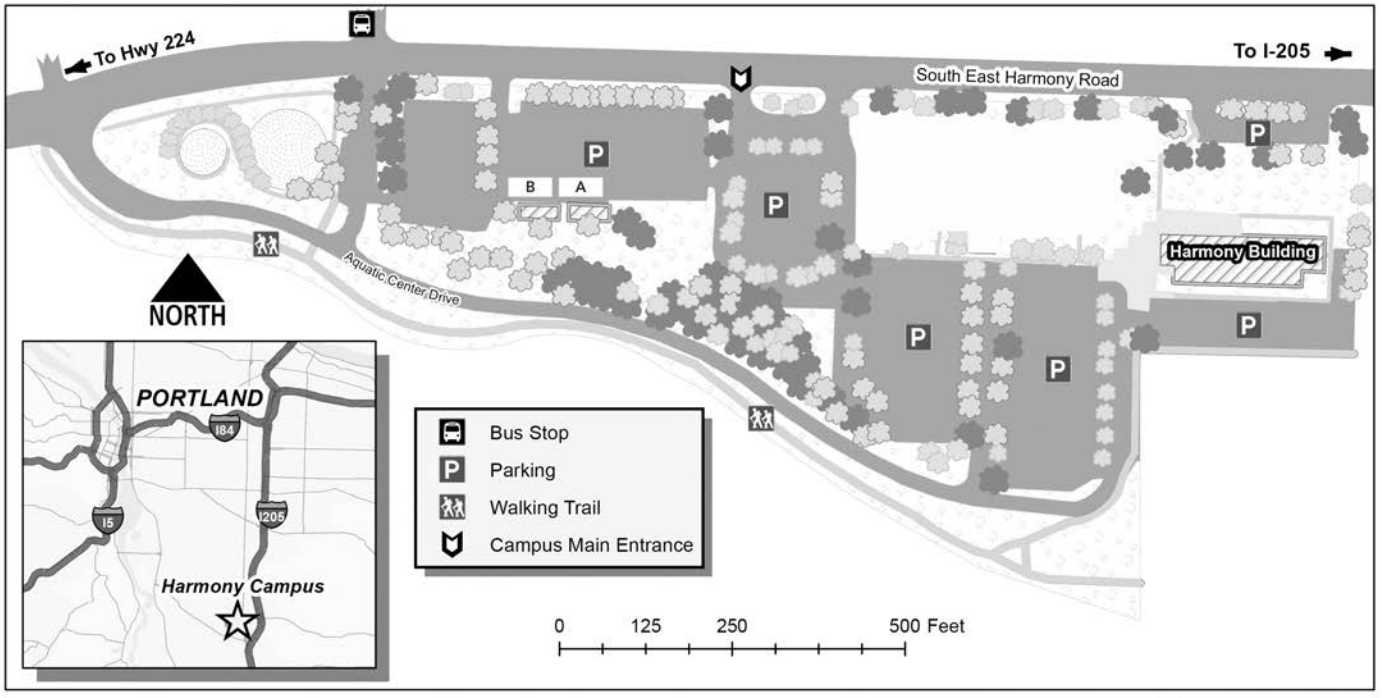
Estacada High School
355 N.E. 6th, Estacada, OR 97023

Molalla Center
(behind Molalla Public Library)
201 East Fifth, Molalla, OR 97308

VICINITY MAP

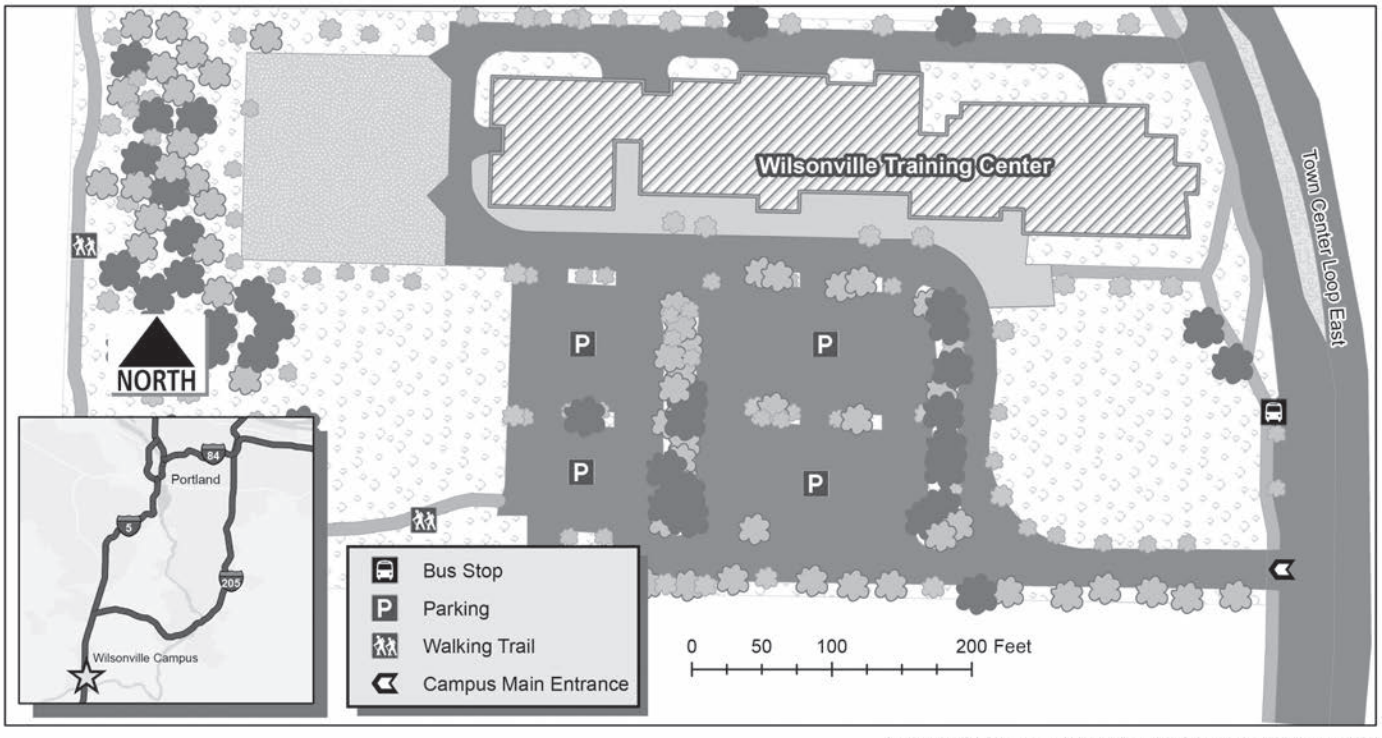


Clackamas Community College
Harmony Community Campus



Created by the GIS Department at Clackamas Community College. Author: W.C. Kotze, April 2013

Clackamas Community College
Wilsonville Campus



Created by the GIS Department at Clackamas Community College. Author: W.C. Kotze, April 2013

Getting Started

www.clackamas.edu

Education That Works

Clackamas Community College

Quick Guide to Getting Started

www.clackamas.edu (click on Admissions & Aid)

www.clackamas.edu/Como_Inscribirse.aspx

- ☐ Apply to CCC
- ☐ Apply for financial aid (if applicable)
- ☐ Submit any previous college work (if applicable)
- ☐ Log in to myClackamas
- ☐ Determine course placement
- ☐ Attend a New Student Advising (NSA) session and register for classes.

Visit *www.clackamas.edu/im_registered_whats_next.aspx* for your next steps after registration!

Admission

ENROLLMENT SERVICES CENTERS
ALL CAMPUS LOCATIONS

503-594-6100

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 that have not completed high school or obtained a GED must comply with special enrollment requirements. See Programs for Adult Populations and High School Age Students, page 15, for additional information.

Students Seeking Degrees or Certificates

If you are working toward a degree or certificate go to *www.clackamas.edu* and click on "Admissions & Aid" to apply for admission online. Paper applications are available upon request.

You should apply for admission at least four weeks prior to when you want to begin at CCC. If you are applying for financial aid or have previous college work to be evaluated, apply 12 weeks prior to when you want to begin at CCC.

Students Not Seeking Degrees or Certificates

If you want to take classes but not complete a degree or certificate you are strongly encouraged to apply for admission by going to *www.clackamas.edu*. Click on "Admissions & Aid" to apply online. Paper applications are available upon request.

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, include official copies of your transcripts with your application or 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 12 weeks 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 College Credit (ACC), Advanced Placement (AP), College Level Examination Program (CLEP), International Baccalaureate (IB) and the military among others. 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 2 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 & Aid".

Special Admission Programs

The following programs require a separate admission application:

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

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 from *www.clackamas.edu*, Admissions & Aid.

Degree Partnership Programs

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

- You can co-enroll at one of three four-year institutions; Portland State University, Oregon State University, Oregon Institute of Technology, and Marylhurst University all offer the opportunity to be admitted and enrolled at the same time you attend CCC.
- Articulation Agreements – CCC offers an array of Associate of Science degrees that are specifically designed with transfer to a partner four-year institution in mind. There are also several Associate of Applied Science degrees that are set up for transfer into either your specific program of study or into a Bachelor's of Applied Science.
- 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.

Programs for Adult Populations and High School Age Students

CCC offers many programs for adult populations and high school aged students:

Skills Development

CCC offers academic assistance to students in all college programs. Emphasis is placed on mastering the foundational skills needed to reach educational goals. Programs are available to help students earn a GED, complete a high school diploma and improve academic skills. Contact the Dye Learning Center at 503-594-3233 for more information.

Adult High School Diploma (AHSD)

CCC is authorized by the State Board of Education to award the Adult High School Diploma (AHSD). If you enter our high school diploma program, you may transfer credits from accredited high schools. AHSD students may also enroll in college credit classes and may receive dual credit for certain classes.

You must be at least 16 years old and have completed 14 credits. If you are under 18, you must provide a referral or a release from compulsory attendance from your local high school. AHSD degree requirements are listed on page 49.

General Education Development (GED)

You may earn a high school equivalency certificate by passing the General Education Development (GED) test. You must be at least 16 years old; those under 18 are admitted only with a referral or a letter of release from compulsory attendance obtained from your high school principal or counselor. A fee is charged each term. Spanish GED is also available. Refer to the current *Class Schedule* for local GED options.

Registration for GED preparation classes takes place in the Dye Learning Center.

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, 503-594-3233.
- To take high school credit recovery classes at CCC that will transfer back to your high school, contact the Skills Development Department, 503-594-3233.
- If you are under 18 and want to take college classes while still in high school contact Enrollment Services, 503-594-6100.
- If you want to earn transferrable college credits for courses you are taking at your high school, contact your high school counselor or the CCC Advanced College Credit coordinator, 503-594-3208.

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 soon after January 1 each year you want to receive aid.

If you are applying for a federal or state grant, a work program or loan, you must complete a Free Application for Federal Student Aid (FAFSA) application form. CCC uses the FAFSA to determine the amount a family and student can contribute to the cost of their college education. The use of this federally approved aid application assures every applicant fair and consistent treatment. Apply online at *www.fafsa.ed.gov*. No fee is charged.

After CCC receives the FAFSA data electronically, our financial aid staff will send you an email and post notifications in your myClackamas account (under My Documents). You must check your account frequently during this process to ensure you have submitted all of the forms 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 and allow up to 12 weeks for the entire process from application to award letter.

Student Eligibility Requirements

You may be eligible for 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 and PLUS Loan programs, you must be enrolled at least half-time (six credit hours).

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 credit hours).

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. Eligible one-year programs must provide training to prepare students for "recognized occupations" as defined in the Dictionary of Occupational Titles.

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 & Aid."

Financial Aid Disbursement Policy

Financial Aid is mailed to students or direct deposited to a student's bank account the last business day prior to the first day of the term. Funds are not available prior to this day. After the term begins, funds are processed on the last working day of each week.

Federal & State Financial Aid Programs

FEDERAL PELL GRANTS

You may be eligible for up to $5,815 a year in 2016-17, depending on the amount of federal funding available. Awards are based on eligibility and enrollment status.

FEDERAL SUPPLEMENTAL EDUCATIONAL OPPORTUNITY GRANTS

You may be eligible for up to $1,050 a year. Part-time students (taking 6-11 credits a term) will receive smaller grants.

OREGON STATE OPPORTUNITY GRANTS

You must be enrolled for six or more credits to be eligible for Oregon State Opportunity Grants. Oregon Opportunity Grants are funded through the Oregon Student Assistance Commission. If you are not an Oregon resident, contact your home state for eligibility requirements for your home state program.

FEDERAL WORK-STUDY

You may be eligible to receive an award to fund a paid part-time job through the college. Jobs are available both on campus and in the community. Part-time students (taking 6-11 credits a term) receive fewer dollars than full-time students.

FEDERAL DIRECT LOANS

Most students are eligible to apply 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 LOANS TO UNDERGRADUATE STUDENTS (PLUS)

Your parents may be eligible for Parent Loans to Undergraduate Students. Commercial banks and other participating lenders offer these loans. Parents may borrow the cost of education minus any financial aid.

CCC Financial Aid Programs

503-594-6100
finaid@clackamas.edu

TUITION NEED WAIVERS

Clackamas Community College offers one-time tuition waivers each year to students who need assistance. Due to limited resources, specific criteria applies to these waivers. Contact the Office of Financial Aid and Scholarships for more information at 503-594-6100.

Scholarships

503-594-6100
scholarships@clackamas.edu

Clackamas Community College offers various scholarship opportunities. The following are available:

HIGH SCHOOL SCHOLARSHIPS

Every year the CCC Foundation offers two full year tuition scholarships and one full-time, one term scholarship through each in-district public high school. Information and applications for these scholarships are available in December in your local high school counseling center or career center.

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 CCC Admissions and Recruitment, 503-594-3284.

TUITION SCHOLARSHIPS

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

STUDENT SCHOLARSHIPS

The CCC Foundation funds over half a million dollars in scholarships for new and returning students. There is one application form to complete for all scholarships, and the application is available online at *www.clackamas.edu/scholarships* January 1 through April 30.

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/

If you have ever served in the Armed Forces you may be eligible for educational benefits. Benefits may also be available for spouses and dependent children of veterans.

Please contact us to verify your benefit eligibility and make a career-focused education plan.

We will:

- Provide information about your benefits
- Assist you with the necessary paperwork
- Create an education plan based on your career goals
- Assist with getting started and being successful
- Certify your enrollment and monitor your progress

The regulations and requirements associated with providing and receiving the variety of veteran benefits are extensive and complex. We are here to assist you with these benefits and more. Please come see us soon.

Placement Tests and Advising

Testing/Assessment Center

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

CCC HARMONY COMMUNITY CAMPUS
503-594-0636

CCC WILSONVILLE CAMPUS
503-594-0944

Visit www.clackamas.edu/testing
or call for testing hours.

To be successful in college, it is important to know your current reading, writing, math, and computer skill levels. These skill levels will be determined by the following:

EVALUATION OF PRIOR COURSEWORK

If you received credit for college writing, math or computer courses at Clackamas Community College or any other college or university, you may be placed based on this course work.

Bring a copy of your official transcripts from any colleges you previously attended to Student Services for recommended placements in writing, math and computer courses at Clackamas Community College.

You may have already completed college credits through several local and national programs including Advanced College Credit (ACC), Advanced Placement (AP), College Level Examination Program (CLEP), International Baccalaureate (IB) and the military among others. 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.

ACT OR SAT SCORES

If you have taken the ACT or SAT and your scores are high enough, you may be placed with these scores. Bring a copy of your scores to the Testing Center for evaluation. If your scores are not high enough, you may be asked to take one or more Placement tests.

PLACEMENT ADVISING FOR READING, WRITING, AND MATH

As an alternative to the Placement test, or if you feel the test might have placed you at the wrong level, you are welcome to meet with the PASS advisers (Placement Advising for Student Success). The advisers are English and Math faculty members, and they hold regular hours at the Oregon City campus Testing Center. Contact the Testing Center for details.

PLACEMENT TESTS FOR READING, WRITING, AND MATH

If you are not able to be placed through prior coursework or ACT/SAT scores, you will need to take one or more of the Placement tests. These tests are computer-based, and are not timed.

COMPUTER PLACEMENT ASSESSMENT

If you have not previously received college credit for completing a computer course, you will need to take our computer assessment test. This assessment can also fulfill the computer competency requirement for some Clackamas Community College degrees. Before taking this test to establish computer competency, please consult with an academic advisor.

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 New Student Advising Session after completing their placement testing. This two hour session will review campus resources and degree requirements, and will provide hands-on experience for choosing courses, creating a schedule, and registering for classes. Please visit the website or call for specific information regarding advising sessions.

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 a mentor. Your faculty advisor's name, e-mail 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
503-594-6100
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 MAY drop you but ARE NOT REQUIRED to do so. 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 Veteran's 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.

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 be added to the course by Enrollment Services on a first-come, first-served and eligibility basis.

  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 and sent a letter 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 enrolled 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.

Beginning with registration for Winter 2017, a new waitlist process will be used:

- You will receive an email in your "student.clackamas.edu" email when a spot opens up and you are next on the waitlist
- 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 waitlist but rather will be passed by for the next student and you will receive another invitation when your spot comes up again

Tuition and Fees

2016-2017 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	$90 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	$257 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	$6.50 per credit	Supports many CCC student activities including athletics, child care, instructional technology and student government.
College Services Fee	$23 per term	Non-refundable. Applies to credit courses only. The College Services Fee covers the cost of various services including graduation, parking, a 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 checks returned for nonsufficient funds.
Course Fees	Varies	Certain classes have special fees in addition to tuition and the general fee. These are listed in the "Course Fee" column in the credit course listing in the *Class Schedule*.

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.

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. Fees may not be deferred, however, tuition may be paid in installments. Contact Enrollment Services for procedures to follow. 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 after the term begins. Registration for these courses begins the third week of the term. Criteria for eligibility can be found on the Senior Tuition Waiver and Audit Form available online at *www.clackamas.edu* or from Enrolllment 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 is due at the time of registration. You can pay in person with cash or a local, bank-imprinted check, for the amount due. You can make credit card payments in person or online using Visa, MasterCard, Discover or American Express.

Pay Later*: Payment is due by 5 p.m. at the end of the second week of each term. Accounts with a balance after this date will be charged a $30 deferred payment fee.

Deferred Payment: Account balances must be paid by 5 p.m. at the end of the sixth week of each term or you will be charged a non-payment fee of $75 and a hold will be put on your account that will prevent future registration.

*Pay Later conditions: You must be 18 years of age, owe a balance of at least $100, and cannot have an existing balance from a previous term or owe a financial aid repayment. If these conditions do not apply, payment is due at the time of 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 2 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 2 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 Student Accounts Receivables Office at 503-594-6068 or *stuaccounts@clackamas.edu*. If you have a question regarding a refund, contact Enrollment Services at 503-594-6100, or *registration@clackamas.edu*.

Cancelled 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.gener

Academic Information & Regulations

www.clackamas.edu

Education That Works

Clackamas Community College

The following academic information and regulations are intended to help you understand CCC policies and processes. If you have any questions, call our Call Center at 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 classes 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 *finaid@clackamas.edu* or click on *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 credit hours dropped prior to the sixth week of the term or credit hours 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 that a student does 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 a student does 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 in order to determine a course of action and the resources needed to support the student's success. Students who do not meet with an academic advisor will be restricted from enrolling in a subsequent term.
- If there is a third consecutive term of attendance that a student does 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 that 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 up for active military duty, and wish to withdraw from classes, you will be held harmless with regard to financial and academic responsibility.

- 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: 503-594-6100 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*.

Clackamas Community College's CPL program can award college credit for knowledge and skills acquired outside the classroom. For more information contact Student Services.

Credit by Examination (Challenge Exam)

You can challenge a course for credit by taking an oral, written, performance examination, 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 tenth week of the term. Credit from challenge exams completed after the tenth 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 an Enrollment Services Center 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, 503-594-3475.

Credit 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 transcripted 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 transcripted 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 transcripted.
Any prefix beginning with "X"	Classes, seminars, workshops and training resulting in Continuing Education Units (CEUs). These courses are not transcripted 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 towards 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	POINTS/CREDIT HOUR
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, please notify the Office of Financial Aid and Scholarships if you change from a credit to an audit or receive an audit grade. You may 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 a small but essential amount of work has to be made up. This could include one exam, a paper, or other assignment. An incomplete can only be initiated with instructor approval and in consultation with the student. The instructor will determine the timeline within which the student must complete the outstanding work, with a maximum of one calendar year. After that calendar year, if no additional work has been completed, the grade awarded will be the grade at the time the incomplete was initiated.

Never Attended and Withdraw

If you never attend a course and don't drop it from your schedule, you remain financially responsible for the course and an instructor will assign a grade of "Y."

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 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, equipment return or financial obligation to the college. 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 towards 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 towards 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 the Transcript Request Line, 503-594-6102.

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


ROOK
HALL

Student Resources & Support Services

www.clackamas.edu

Education That Works

Clackamas Community College

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 present advising sessions for new students, pre-nursing students, and others. Please visit the website for more information, including hours, transfer information, and a multitude of other resources.

Accounts Receivable

www.clackamas.edu/Tuition/Options/

503-594-6100

We provide 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, 1098T's, 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 operates under a constitution designed to promote student activities which stimulate social, physical, moral and intellectual life on campus.

ASG operates helpful services for students such as the book exchange, grant opportunities, and the Cougar Cave food bank. It also coordinates a variety of activities such as awareness events, bbq's, and parties.

Intramurals

503-594-3931

Clackamas offers a variety of intramural sports activities through the Associated Student Government (ASG). While not offered every year, activities have included fun runs, softball, basketball, flag football, Badminton, dodge ball, ultimate Frisbee, and soccer.

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.

For Intramurals, see Associated Student Government or contact *campact@clackamas.edu*

Bookstore

www.cccbooks.com/home.aspx

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

CCC HARMONY COMMUNITY CAMPUS
HARMONY BUILDING
503-594-0647

The Bookstore is the place to shop for almost everything a student needs for college. Items in stock include new and used textbooks, rental textbooks, e-books, study aids, calculators, flash drives, art, drafting and office supplies, sundries, stamps, school supplies, greeting cards, general books, CCC clothing, snacks, candy, cold drinks and convenience foods. Tri-Met bus passes, tickets, and discounted Tri-Met college term passes are available at both locations. The Harmony Store also stocks items needed for the Nursing and Allied Health programs including scrubs, lab coats, name tags and stethoscopes. Both stores offer a special order service for many items not normally stocked.

Textbooks are available for shipment or in store pick-up by ordering online at *www.cccbooks.com*

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

Students may sell their unwanted new and used books for cash at the Bookstore. Receipts are not needed for textbook buyback. While textbook buyback is open most of the year, students are encouraged to sell their books at term ending when prices are usually better.

Hours are posted in the *Class Schedule*, as well as the website *www.cccbooks.com*

Both stores are open extended hours the first week of fall, winter and spring terms.

Career Services

www.clackamas.edu/careerservices

CCC OREGON CITY CAMPUS, COMMUNITY CENTER
503-594-6001

CCC HARMONY COMMUNITY CAMPUS
503-594-0625

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/childcare/

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 6 weeks to 12 years. Children enrolled in the program will play and learn in our NAEYC accredited, state-licensed child care program which offers 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. We encourage you to 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.ccchs.org

503-675-4565

CCCC provides free pre-school and day care services on campus.

Head Start Preschool

Preschool services through Head Start gives children ages 3 to 5 years old 3.5 hours per day, 4 days per week of classroom time in addition to regular home visits from September - May. Our state certified teachers and aides will 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, 4 days a week for children 6 weeks to 3 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

depts.clackamas.edu/asg/ClubsHomePage.asp

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 the ASG procedures. Some of the clubs active on campus include Collegiate Team - League of Legends, French Club, Gender & Sexuality Alliance, Horticulture, International, Landscape, Mind Body Spirit Advocate, NW Collegiate Ministries, Phi Theta Kappa, Spanish, STEM, Unidos, Veteran's, Welding, and Writers.

College Counselors

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 which help students benefit from their experience at Clackamas Community College. Counselors at CCC help students develop career goals and to 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/CommunityGardens/

CCC OREGON CITY CAMPUS
503-594-3041

The Community Gardens at Clackamas Community College provides 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 their 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. You must be a currently registered student to use the lab. Streeter Hall Open Computing lab is open Monday–Thursday from 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 which 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/DisabilityResourceCenter/

CCC OREGON CITY CAMPUS, COMMUNITY CENTER
503-594-6357
drc@clackamas.edu

The Disability Resource Center (DRC) offers a wide range of services to provide students with disabilities access to college programs and activities and auxiliary support. Services may include: interpreters for Deaf and hard of hearing students, note taking options, proctored testing, electronic text, test readers or scribes, campus-based adaptive equipment and training, orientations, campus tours by special arrangement, and referral assistance. The DRC also provides faculty/staff consultations.

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. Students needing temporary disabled parking (two weeks or less) may make arrangements through the Campus Safety Department. A letter from a physician supporting the need for temporary disability parking is required.

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 specifically 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 that they have been discriminated against or harassed due to their disability should contact the Disability Resource Center Coordinator.

Enrollment Services Center

www.clackamas.edu/EnrollmentServices/

CCC OREGON CITY CAMPUS, ROGER ROOK HALL
503-594-6100

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, making payments and general financial aid.

The Office of Financial Aid and Scholarships

www.clackamas.edu/FinancialAid/

CCC OREGON CITY CAMPUS, ROGER ROOK HALL
503-594-6100

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

www.clackamas.edu

You must include your Social Security number on the CCC application.

STEP 2 APPLY FOR FINANCIAL AID

Apply online at *www.fafsa.gov* every year.

Be sure to select "Link to IRS" system.

STEP 3 WAIT FOR AN E-MAIL IN YOUR MYCLACKAMAS

Go to: *https://my.clackamas.edu*

- Indicates that we have received your FAFSA.
- Gives instructions on the next steps.

STEP 4 CHECK YOUR MYCLACKAMAS ACCOUNT-WEEKLY

Click on: **My Documents**

- Complete all documents requested.
- Once documents are submitted, it may take up to 12 weeks to review your file.
- Additional information may be requested.
- You will be notified of the result in your myClackamas email once your file is reviewed.
- Accept or reject your award letter online.
- To receive loans, go to: *www.studentloans.gov*
- Complete: Entrance Counseling for CCC and a Master Promissory Note (MPN). (Select Subsidized/Unsubsidized)

NEED HELP?

- FAFSA Lab is open Monday–Thursday, from 10 a.m.–1 p.m. and 1:30 p.m.–3 p.m. The lab is open to all students needing assistance with completing the FAFSA, FSA ID, scholarship applications, Entrance Counseling, Master Promissory Note, and more.
- Email: *finaid@clackamas.edu*
- Drop-in Hours: Monday–Friday, 11 a.m.–1 p.m. & 2–4 p.m.
- Cougar Call Center: 503-594-6100

Follow the CCC Financial Aid Recommended Deadlines to ensure that you receive financial aid funds in a timely manner.

2016-2017 Financial Aid Recommended Deadlines

SUMMER TERM 2016: MARCH 28, 2016

FALL TERM 2016: JUNE 20, 2016

WINTER TERM 2017: SEPTEMBER 26, 2016

SPRING TERM 2017: JANUARY 9, 2017

Scholarships

scholarships@clackamas.edu

503-594-6100

Clackamas Community College has many scholarship opportunities available for students of all ages and majors. The list is available at *http://clackamas.academicworks.com*. Here are a few types of scholarships we offer:

General Student Scholarships

The CCC Foundation funds over $550,000 in scholarships each year for new and returning students. Application is easy using our online form at *www.clackamas.edu/finaidcenter*. You can apply any time during the year. We review applications in April and August for awarding in Fall term, and in November for Winter term awards.

High School Scholarships

The CCC Foundation offers two full-year tuition scholarships and one single term full-time scholarship through each public high school in our District. Information about these scholarships is available in at local high school counseling or career centers.

High school students who live in our District and compete in the annual Clackamas Regional Skills contest are eligible for special CCC scholarships. Partial one-term tuition scholarships are awarded to the top three winners in all categories of the competition. For more information contact Financial Aid, *finaid@clackamas.edu.*

Special 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.*

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
- Full service computer lounge with free coffee and snack bar
- Assistance with all the 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 please 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/WorkStudy/

503-594-3428

The Work Study program is a federal financial aid program providing temporary 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 course work in a degree or certificate program. Applicants should use the Free Application for Federal Student Aid (FAFSA) to apply for financial aid.

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 Service

www.triohosp.com/ccc/cougar_cafe

CCC OREGON CITY CAMPUS, COMMUNITY CENTER

Cougar Café, located in the Community Center, is open Monday-Thursday 7 a.m. to 5 p.m. and Friday 7 a.m. - 2 p.m. In addition to beverages and snacks, a grab & go case is available with a wide variety of house-made salads, sandwiches, pastries, and snack packs. We offer a full assortment of specialty coffee beverages featuring locally roasted beans from Caffe Vita Coffee Roasters. Hot breakfast is available each day until 10 a.m. Hot lunch offerings are available until 2 p.m. and include burgers, fries/tots, Pizza Schmizza, wraps and rice bowls, two scratch-made soups, and sandwiches built-to-order. Additional information and menus are available at *www.triohosp.com/ccc/cougar_cafe*.

Graduation Services

CCC OREGON CITY CAMPUS, COMMUNITY CENTER

503-594-6651

gradservices@clackamas.edu

A completion coach 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.

Graduation Services is located in the Community Center on the Oregon City Campus, CC124.

Haggart Astronomical Observatory

www.clackamas.edu/Haggart_Observatory.aspx

CCC OREGON CITY CAMPUS

503-594-6044

Haggart Astronomical Observatory is located at the Environmental Learning Center on the Oregon City campus. The centerpiece of the Observatory is a 24" reflector telescope. Through a partnership agreement with the Rose City Astronomers (RCA), a local amateur astronomy club, the RCA maintains the observatory and opens it at least once a month for the general public, weather permitting. For additional information on the observatory, visit the Observatory's website at *www.clackamas.edu/Haggart_Observatory.aspx* For information on public openings and private access, visit the RCA website at *rosecityastronomers.org//sp/haggart.htm*

Astronomy courses are offered at CCC through the Science Department. See Physics in a current *Class Schedule*.

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. They 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.

Academic Computing Lab

www.clackamas.edu/tutoring/

503-594-6632

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. The Academic Computing Lab is open Monday–Thursday from 7:30 a.m.–8 p.m., Friday 7:30 a.m.–5 p.m., and Saturday 11 a.m.–3 p.m.

continued…

Math Lab

503-594-3121

tutoring@clackamas.edu

Drop-in (no appointment) math tutoring is available in the Learning Center on the Oregon City campus and at the Harmony campus. In the Math Lab, students can obtain one-to-one help for their math homework and in preparation for exams. Help is available for most math classes taught on campus.

For hours of operation view the Math Lab website at: *www.clackamas.edu/Math/Mathlab/*

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.

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 Campus and Wilsonville in some subjects.

Additional Tutoring Services and Labs

- Chemistry Help Center: Pauling 165
- Accounting Tutoring: Academic Computing Lab: Dye 128
- Anatomy and Physiology Study Room: Pauling 145
- Foreign Language Lab: McLoughlin 244
- Digital Media Lab: McLoughlin 125
- MIDI and Music labs: Niemeyer 216, 211
- Horticulture library and computer lab: Clairmont
- Harmony Campus: Math Lab and Writing Center
- Volunteer Literacy Center
- Adult Basic Skills SMART Learning Lab

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 7 hours of free Smarthinking tutoring per term by logging into their Moodle account and clicking on the Smarthinking icon located on the top right of their screen. More information found at http://*www.clackamas.edu/smarthinking/*

Library

www.clackamas.edu/Library

503-594-6323

The library has a collection of over 32,000 books and compact disks and offers electronic access to the complete text of more than 4,600 journals, 1,200 newspapers, and over 50,000 e-books. With a student ID number, all databases may be accessed from home through the library's Web page. Librarians assist students in the use of library and Internet resources and provide formal library instruction in LIB-101. Electronic reference assistance, interlibrary loan, and reserve materials are also available. The 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 which are open to students and to the community. Groups include Concert Band, Jazz Ensemble, Chamber Singers, Vocal Jazz Ensemble, Chamber Ensemble, Orchestra, Jazz Combo/Improvisation and Pep Band (pop/blues/rock/R&B). Some ensembles require an audition. 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 over 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/peerprogram/

CCC OREGON CITY CAMPUS, COMMUNITY CENTER
503-594-3030

Students selected to serve in the Peer Program help create a comfortable, safe, and supportive environment for our new and returning students. CCC Peer Assistants and Peer Mentors serve our college in a variety of positions on campus, ranging from in-classroom mentoring to supporting a variety of Student Services across campus.

Renewable Energy and Sustainability Center

depts.clackamas.edu/sustainability/

503-594-3657

The Renewable Energy and Sustainability Center was created to serve as a clearing house for information about sustainable practices and activities already accomplished by the college and plans for future activities. It is also a resource for college and community events in the area of sustainability and a source for career options available in the area of green jobs. Clackamas Community College can help you reach those career goals through degree and certificate options. Most of the information is available through our website, however, there is also a campus sustainability tour which showcases current efforts by the college to move toward greater environmental, economic and social sustainability.

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 is a program which combines classroom learning with volunteer field experience. College credit is earned for participation in the program and tuition is free.

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 $10.

Student Life & Leadership

www.clackamas.edu/StudentLife

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

The Student Life & Leadership Office serves as a resource and information center and coordinates student activities on campus. The office provides information on transportation, insurance, student government, special events, clubs, health and wellness events, intramurals, housing, and other programs of interest to students. The office is also the location for calculator and locker rentals, as well as the campus Lost & Found.

Student Publications

theclackamasprint.net
www.clackamas.edu/Student_Publications.aspx

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/Assessment

www.clackamas.edu/Testing/

CCC OREGON CITY CAMPUS, ROGER ROOK HALL, RR136
503-594-3283
testing@clackamas.edu

The Testing/Assessment Center offers a variety of testing and assessment services including:

- Placement assessment
- GED (General Educational Development)
- Distance Learning proctored testing
- Make-up exams (by instructor arrangement)
- Computer Science Placement
- Pearson Vue Testing
- TEAS Testing (Test of Essential Academic Skills)
- Workkeys (National Career Readiness Certificate)
- Workkeys (Teacher Assistant Certificate)
- Oregon Department of Agriculture Exams
- State of Oregon Tax Board Exams

continued…

CCC HARMONY COMMUNITY CAMPUS
HARMONY BUILDING
503-594-0636

- Placement assessment
- Make-up exams (by instructor arrangement)
- Computer Science Placement
- Computer Competency Exam
- Distance Learning proctored testing

CCC WILSONVILLE CAMPUS
503-594-0944

- Placement assessment
- Distance Learning proctored testing
- Make-up exams (by instructor arrangement)
- Computer Competency Exam
- State of Oregon Tax Board Exams
- Computer Science Placement

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 which 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 see our website at *www.clackamasrep.org*

Tutorial Services

See The Learning Center.

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 #4 in the Nation by the Military Times: Best for Vets (2-year Colleges) annual survey, making CCC the #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.

Workforce Services

www.clackamas.edu/WorkforceServices/

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 tapping a skilled pool of talent to remain competitive.

Be Future Ready!

WorkSource Clackamas is preparing Oregonians for jobs in healthcare, green technologies, logistics and more.

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 for the 21st Century. Take the next step, call 503-594-6246, or visit *worksourceoregon.org/home/worksourcecenters/238-oregon-city*

Writing Center

See The Learning Center.

Student Rights

Campus Security Report – Jeanne Clery Act1

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 web site (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 503-594-6234 or at *www.clackamas.edu/Rights_and_Responsibilities.aspx*

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 will be released upon request to anyone:

1. Full name
2. Enrollment status
3. Verification of certificate , degree, or honors and awards
4. Residency status
5. Major/program
6. 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 his/her 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.

continued…

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/Rights_and_Responsibilities.aspx*

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

Discrimination Concerns

Clackamas Community College does not discriminate on the basis of race, color, religion, gender, sexual orientation, marital status, age, national origin, disability, family relationship or any other protected status in accordance with applicable law. The college's commitment to 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 Grievance Procedure

Any disabled student who feels that he/she has been discriminated against or harassed due to his/her disability should contact the Disability Resource Coordinator to report the event. The Disabilities Resource Coordinator will then investigate the incident. Please refer to the Problem Resolution Procedure as outlined in the Student Handbook.

Any disabled student 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 Report Procedure

All complaints of sexual or other harassment will be investigated. Once the college has a notice or complaint of sexual harassment, the college has a legal duty to investigate. Please refer to board policy for Sexual harassment complaint procedure: *policy.osba.org/clackcc/J/JBA_GBN%20R%20G1.PDF*

When a student reports an alleged incident of sexual or other harassment to a staff person, the student will immediately be referred to the Associate Dean of AFAC. Complaints involving only students will be investigated by the Associate Dean of AFAC; complaints involving one or more employees should be reported to the Dean of Human Resources; complaints involving vendors or other individuals (not employees) should be reported to the Dean of Campus Services, or designee. In all cases the responsible compliance officer will consult with the Dean of Human Resources to ensure consistency

If you need assistance resolving a problem please see page 42 for information and a Problem Resolution Form.

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 educations 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, Patricia Anderson Wieck, Dean, Human Resources
Oregon City Campus, 503-594-3300

Problem Resolution Form

This form is used to aid in resolving a problem. Please read the instructions provided in the CCC Student Handbook for details of the process. Students should submit this form to the director of the area of concern (registration, enrollment, student services, or department chair). If a resolution is not reached, this form will be given to the Associate Dean of AFAC, Darlene Geiger, Dye 142.

Please reference the college rule, policy, or procedure allegedly violated as described in Student Rights, Freedom & Responsibilities *www.clackamas.edu/Rights_and_Responsibilities.aspx*

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

Clackamas Community College

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.*

General Requirements (apply 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 2016-17, the oldest catalog that can be used is 2011-12).
- For the catalog selected, you must have earned at least one credit in that calendar year.

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 of 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.

DEGREE S	Career Pathway	less than one year	one year	AAS	AS
Accounting AAS				p. 85	
Accounting Clerk Certificate			p. 85		
Administrative Office Professional AAS				p. 86	
Administrative Office Assistant Certificate			p. 87		
Administrative Office Assistant Training Certificate		p. 87			
Arboriculture				p. 89	
Automotive Service Technology AAS				p. 92	
Auto Body/Collision Repair and Refinishing Technology AAS				p. 90	
Auto Body/Collision Repair and Refinishing Technology Certificate	p. 91				
Under Car Technician – Automatic Transmission Certificate	p. 93				
Under Car Technician – Manual Transmission Certificate	p. 94				
Under Hood Technician Certificate	p. 95				
Biology AS					p. 58
Business AAS				p. 95	
Business Management Certificate			p. 96		
Management Fundamentals Certificate		p. 97			
Human Resource Management Certificate			p. 97		
Human Resource Management Essentials Certificate	p. 98				
Marketing Certificate			p. 98		
Integrated Marketing & Promotion Certificate	p. 99				
Clinical Laboratory Assistant Certificate (limited entry)			p. 99		
Computer-Aided Manufacturing AAS				p. 101	
Computer & Network Administrator AAS				p. 102	
Computer & Network Administrator Certificate			p. 102		
Computer Application Support AAS				p. 103	
Computer Application Support Certificate			p. 103		
Computer Science AS					p. 59
Construction Trades, General Apprenticeship AAS (limited entry)				p. 88	
Construction Trades, General Apprenticeship Certificate (limited entry)			p. 88		
Manual Trades Apprenticeship Certificate (limited entry)		p. 88			
Corrections AAS				p. 104	
Juvenile Corrections Certificate			p. 105		
Criminal Justice AAS				p. 106	
Dental Assistant Certificate (limited entry)			p. 107		
Digital Media Communications AAS				p. 108	
Entry Level Multimedia Journalist Certificate	p. 110				
Video Production Technician Certificate	p. 110				
Early Childhood Education & Family Studies AAS				p. 111	
Early Childhood Education & Family Studies Certificate			p. 111		
Electrician Apprenticeship Technologies AAS (limited entry)				p. 88	
Electrician Apprenticeship Technologies Certificate (limited entry)			p. 80		
Limited Electrician Apprenticeship Technologies Certificate (limited entry)		p. 88			
Electronics Engineering Technology AAS				p. 112	
Electronics Engineering Technology Certificate			p. 112		

continued…

DEGREES	Career Pathway	less than one year	one year	AAS	AS
Emergency Management AAS				p. 114	
Emergency Medical Technology Certificate			p. 114		
Employment Skills Training Certificate		p. 115			
Engineering AS					p. 61
English AS					p. 69
Fire Science (Wildland) Certificate			p. 115		
Wildland Fire Forestry Certificate	p. 116				
Wildland Fire Fighter 1 Certificate	p. 116				
Fitness Technology Certificate			p. 117		
Geographic Information Systems (GIS) Technology Certificate			p. 118		
Geology AS					p. 73
Gerontology Certificate			p. 118		
Gerontology for Health Care Professional Certificate	p. 119				
Nursing Assistant - Gerontology Specialist Certificate	p. 120				
Horticulture AS					p. 72
Horticulture AAS				p. 120	
Horticulture Certificate			p. 120		
Irrigation Technician Certificate	p. 122				
Plant Health Management Certificate	p. 123				
Human Services Generalist AAS				p. 123	
Human Services Generalist Certificate			p. 123		
Alcohol & Drug Counselor Certificate	p. 124				
Landscape Management AAS				p. 125	
Landscape Practices Certificate			p. 126		
Manufacturing Technology AAS				p. 127	
Manufacturing Technology Certificate			p. 127		
CNC Machining Technician Certificate	p. 129				
Mastercam Certificate		p. 129			
Medical Assistant Certificate (limited entry)			p. 129		
Microelectronics Systems Technology AAS				p. 131	
Microelectronics Systems Technology Certificate			p. 131		
Music AS					p. 74
Music Performance & Technology				p. 132	
Music Technology Certificate			p. 134		
Nursing AAS (limited entry)				p. 135	
Occupational Skills Training Certificate		p. 138			
Paraeducator Certificate			p. 139		
Professional Truck Driver Certificate		p. 140			
Project Management AAS				p. 140	
Project Management Certificate		p. 141			
Project Management Leadership & Communication Certificate	p. 141				
Project Management Tools & Techniques Certificate	p. 142				
Renewable Energy Technology AAS				p. 142	
Energy Systems Maintenance Technician Certificate	p. 143				
Renewable Energy Technology Certificate			p. 142		
Retail Management Expanded Certificate			p. 144		
First-Line Supervisor Fundamentals Certificate	p. 145				
Retail Management Certificate		p. 144			
Organic Farming Certificate			p. 145		
Water & Environmental Technology AAS				p. 146	
Water & Environmental Technology Certificate			p. 146		
High Purity Water Certificate		p. 148			
Web Design & Development AAS				p. 148	
Web Design Certificate			p. 149		
Welding Technology AAS				p. 150	
Welding Technology Certificate			p. 150		
Entry Level Welding Technician Certificate	p. 152				

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 of the schools currently part of the Oregon University System (OUS).

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 university within the Oregon University System (OUS) 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 university within the Oregon University System (OUS) 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 Oregon University System schools 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 s/he fully understands 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 an Oregon University System (OUS) school 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 18-19.

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 45-46).

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 44 for additional general requirements for all degrees and certificates
- Specific discipline requirements are listed on pages 81-152.

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 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, whose K-12 cohort has not yet completed four years of high school, 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
US History	1
Global Studies	1
Government & Civics	1
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 earning their AHSD are required to take the COMPASS college placement test as an exit activity the term prior to their expected graduation as part of their transition plan and as a way to show competency in Reading, Writing and Math.

COMPASS scores allowing admittance to MTH-060, WRD-090, and WRD-098 or equivalent are required. Students must demonstrate proficiency in essential skills for reading, writing, math, and create a personalized learning plan.

Students must successfully complete at least 12 college credits or two high school units through CCC.

General Education Development (GED)

Students may earn a high school equivalency certificate by passing the General Education Development (GED) test. Students must be at least 16 years old; those under 18 are admitted only with a referral or a letter of release from compulsory attendance obtained from the high school principal or counselor. A fee is charged each term. Spanish GED is also available. Refer to the current *Class Schedule* for local GED options.

Registration for GED preparation classes takes place in the Dye Learning Center.

Student Guide 2016-2017

Associate of Arts Oregon Transfer Degree (AAOT)

Note: For the most current list of General Education courses, go to: *www.clackamas.edu/curriculum/*

Requirements	Courses *Choose from the following courses to meet degree requirements. All courses must be passed with a C or better.*
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, 112
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, 207, 240, 260, 270, 294, 294A; **HE**-151, 152, 201, 202, 204, 205, 207, 223, 249, 250, 252, 255, 261, 277; **HPE**-295
GENERAL EDUCATION DISTRIBUTION AREA **Arts & Letters** 3 courses from 2 or more disciplines. Each course must be at least 3 credits.	Choose from the following: **ART**-*101, *102, *103, 115, 116, 117, 131, 132, 133, 194, 195, *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**-*105, *126, *140, 212, *218, *219, 227; **DMC**-195; **ENG**-100, 104, 105, 106, *107, *108, *109, 116, 121, 130, 195, 201, 202, 203, 204, 205, *213, 214, 216, 218, 226, *240, *241, *242,*250, *251, *252, 253, 254, *266, 270, 275; **FR**-*201, *202, *203; **GER**-*201, *202, *203; **HUM**-*160, *170, 180, 181, 182, *231,*235, *240, *241, *242; **J**-211; **MUS**-105, 111, 112, 113, 205, 206, 211, 212, 213; **PHL**-*101, *102, *103, *205, *210, *213, *215; **R**-*101, *102, *103, *204, *210, *211, *212, *214; **SPN**-*201, *202, *203; **TA**-101, 102, 103, 141, 142, 143; **WR**-220, *241, 242, 243, *244, 245, 248, 262, 263, 265, 270
GENERAL EDUCATION DISTRIBUTION AREA **Social Science** - 4 courses from 2 or more disciplines. Each course must be at least 3 credits.	Choose from the following list: **ANT**-*101, *102, *103, *231, *232; **CJA**-101; **EC**-115, 200, 201, 202; **GEO**-*100, *110, *121, *122, *130, *208, *230; **HST**-*101, *102, *103, *130, *131, *132, *136, *137, *138, *201, *202, *203, *210, *220; **PS**-*200, 201, 203, 204, 205, 206, 225, 297; **PSY**-200, *205, *214, 215, *219, *221, *231; **SOC**-*204, *205, *206, *210, *225; **SSC**-*160, *170, *231,*235, *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.	Choose from the following courses: **ASC**-175, 176, 177; **BI**-101, 102, 103, 112, 160 & 160L, 165C & 165CL, 165D, 165T, 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, 212, 213, 243, 244, 252, 253, 254, 256, 261; **PH**-104, 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 the Career Technical Programs, pages 81-152, for a listing of courses that may may be included in the 12 credits mentioned above.

** Course meets Cultural Literacy requirement.*

Note: Placement in RD-115 and/or WR-121 is recommended for courses on this page and in some cases, placement in MTH-105 or MTH-111 may also be recommended. See course descriptions, pages 153-250.

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

Student Planner Worksheet 2016-2017

Associate of Arts Oregon Transfer Degree (AAOT)

This guide is to be used for educational planning/advising purposes only.

Requirements	Credits/ Courses Required	CCC Courses Completed	Transferred Courses	Credits/ Courses Earned	Credits/ Courses Needed
Writing	*8 credits*				
Oral Communication*	*1 course*				
Mathematics	*1 course*				
Health & Physical Education	*1 or more courses totaling at least 3 credits*				
Arts & Letters* Select 3 courses from 2 or more disciplines.	*3 courses*				
Social Science* Select 4 courses from 2 or more disciplines.	*4 courses*				
Science/Math/Computer Science* Select 4 courses from at least 2 disciplines including 3 laboratory courses in biological or physical sciences.	*4 courses*				
Elective Courses Any college-level course. May include up to 12 credits of career technical courses.	*will vary*				
	TOTALS				

(Total minimum of 90 credits required.)

Additional Graduation Requirements

- ☐ All courses must be passed with a grade of C or better
- ☐ Complete a minimum of 90 credits
- ☐ Complete at least 23 credits at CCC
- ☐ Establish cumulative GPA of 2.0 or above

Submit a Petition for Graduation form to Graduation Services two terms prior to when you expect to graduate.

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

**Courses used in these areas must be at least three credits. See list on page 50 for approved courses.*

See page 44 for additional information on general requirements for graduation.

Students are encouraged to work closely with an academic advisor if they are planning to transfer to a four-year institution upon completion of these programs. Call 503-594-3475 or email: *advising@clackamas.edu* for more information.

Student Guide 2016-2017

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

Note: For the most current list of General Education courses, go to: *www.clackamas.edu/curriculum*

Requirements	Courses *Choose from the following courses to meet degree requirements. All courses must be passed with a C or better.*
Writing - minimum 8 credits	WR-121 and either 122 or 227
Oral Communication - 1 course	COMM-111 or COMM-112
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 Courses in this area 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 chosen from 2 or more disciplines. Courses used in this area must be at least 3 credits.	Choose from the following: **ART**-*101, *102, *103, 115, 116, 117, 131, 132, 133, 194, 195, *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**-*105, *126, *140, 212, *218, *219, 227; **DMC**-195; **ENG**-100, 104, 105, 106, *107, *108, *109, 116, 121, 130, 195, 201, 202, 203, 204, 205, *213, 214, 216, 218, 226, *240, *241, *242, *250, *251, *252, 253, 254, *266, 270, 275; **FR**-*201, *202, *203; **GER**-*201, *202, *203; **HUM**-*160, *170, 180, 181, 182, *231, *235, *240, *241, *242; **J**-211; **MUS**-105, 111, 112, 113, 205, 206, 211, 212, 213; **PHL**-*101, *102, *103, *205, *210, *213, *215; **R**-*101, *102, *103, *204, *210, *211, *212, *214; **SPN**-*201, *202, *203; **TA**-101, 102, 103, 141, 142, 143; **WR**-220, *241, 242, 243, *244, 245, 248, 262, 263, 265, 270
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. Courses used in this area 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; **EC**-200,; **GEO**-*100, *110, *121, *122, *130, *208, *230; **HST**-*101, *102, *103, *130, *131, *132, *136, *137, *138, *201, *202, *203, *210, *220; **PS**-*200, 201, 203, 204, 205, 206, 225, 297; **PSY**-200, *205, *214, 215, *219, *221, *231; **SOC**-*204, *205, *206, *210, *225; **SSC**-*160, *170, *231, *235, *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. Courses used in this area must be at least 3 credits.	Choose from the following courses: **ASC**-175, 176, 177; **BI**-101, 102, 103, 112, 160 & 160L, 165C & 165CL, 165D, 165T, 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**-104, 121, 122, 123, 201, 202, 203, 211, 212, 213; **Z**-201, 202, 203
Business Specific - minimum 20 credits	BA-101, 131, 211, 213 and 226 required
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 the Career Technical Programs, pages 81-152, for a listing of courses that may be included in the 12 credits mentioned above.

** Course meets Cultural Literacy requirement.*

Note: Placement in RD-115 and/or WR-121 is recommended for courses on this page and in some cases, placement in MTH-105 or MTH-111 may also be recommended. See course descriptions, pages 153-250.

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

Student Planner Worksheet 2016-2017

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

This guide is to be used for educational planning/advising purposes only.

Requirements	CCC Courses Completed	Transferred Courses	Credits Earned	Credits Needed
Writing WR-121, 122 or 227, minimum 8 credits				
Oral Communications COMM-111 or COMM-112				
Mathematics 3 courses of MTH-111 or higher, 4 credits of statistics (MTH-243 or MTH-244) are required. Courses in this area must be at least 3 credits.				
Cultural Literacy - 1 course Courses in this area must be at least 3 credits.				
Arts & Letters* 3 courses chosen from 2 or more disciplines. Courses used in this area must be at least 3 credits.				
Social Science* 4 courses chosen from at least 2 disciplines, including **EC-201** and **EC-202**. Courses in this area must be at least 3 credits.				
Science* 4 courses from at least two disciplines including at least three laboratory courses in biological and/or physical science. Courses in this area must be at least 3 credits.				
Business Specific - minimum 20 credits BA-101, 131, 211, 213 and 226 required				
Elective Courses and/or University Specific Requirements- up to 13 credits (Refer to your transfer school for specific university requirements. Up to 12 credits of career technical courses may be used.)				
	TOTALS			

(Total minimum of 90 credits required.)

Additional Graduation Requirements

- ☐ All courses must be passed with a grade of C or better
- ☐ Complete a minimum of 90 credits
- ☐ Complete at least 23 credits at CCC
- ☐ Establish cumulative GPA of 2.0 or above

Submit a Petition for Graduation form to Graduation Services two terms prior to when you expect to graduate.

No course may be used to satisfy more than one requirement or distribution area.
Courses used in these areas must be at least three credits. See list on page 52 for approved courses.
See page 44 for additional information on general requirements for graduation.

Students are encouraged to work closely with an academic advisor if they are planning to transfer to a four-year institution upon completion of these programs. Call 503-594-3475 or email: *advising@clackamas.edu* **for more information.**

Student Guide 2016-2017

Associate of Science Oregon Transfer Degree-Computer Science (ASOT-Computer Science)

Note: For the most current list of General Education courses, go to: *www.clackamas.edu/curriculum*

Requirements	Courses *Choose from the following courses to meet degree requirements. All courses must be passed with a C or better.*
Writing - minimum 8 credits	WR-121, and either 122 or 227
Oral Communication - 1 course	COMM-111 or COMM-112
Mathematics - 2 courses	MTH-251 and MTH-252 are required.
Health/Wellness/Fitness 1 or more HE, HPE or PE courses totaling at least 3 credits.	**PE**-185, 194, 207, 240, 260, 270, 294, 294A; **HE**-151, 152, 201, 202, 204, 205, 207, 223, 249, 250, 252, 255, 261, 277; **HPE**-295
GENERAL EDUCATION DISTRIBUTION AREA **Arts & Letters** 3 courses chosen from 2 or more disciplines. Courses used in this area must be at least 3 credits.	Choose from the following: **ART**-*101, *102, *103, 115, 116, 117, 131, 132, 133, 194, 195, *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**-*105, *126, *140, 212, *218, *219, 227; **DMC**-195; **ENG**-100, 104, 105, 106, *107, *108, *109, 116, 121, 130, 195, 201, 202, 203, 204, 205,*213, 214, 216, 218, 226, *240, *241, *242, *250, *251, *252, 253, 254, *266, 270, 275; **FR**-*201, *202, *203; **GER**-*201, *202, *203; **HUM**-*160, *170, 180, 181, 182, *231, *235, *240, *241, *242; J-211; **MUS**-105, 111, 112, 113, 205, 206, 211, 212, 213; **PHL**-*101, *102, *103, *205, *210, *213, *215; **R**-*101, *102, *103, *204, *210, *211, *212, *214; **SPN**-*201, *202, *203; **TA**-101, 102, 103, 141, 142, 143; **WR**-220, *241, 242, 243, *244, 245, 248, 262, 263, 265, 270
GENERAL EDUCATION DISTRIBUTION AREA **Social Science** 4 courses chosen from 2 or more disciplines. Courses used in this area must be at least 3 credits.	**ANT**-*101, *102, *103, *231, *232; **CJA**-101; **EC**-115, 200, 201, 202; **GEO**-*100, *110, *121, *122, *130, *208, *230; **HST**-*101, *102, *103, *130, *131, *132, *136, *137, *138, *201, *202, *203, *210, *220; **PS**-*200, 201, 203, 204, 205, 206, 225, 297; **PSY**-200, *205, *214, 215, *219, *221, *231 SOC-*204, *205, *206, *210, *225; **SSC**-*160, *170, 180, 181, 182, *231, *235, *240, *241, *242; **WS**-101*
GENERAL EDUCATION DISTRIBUTION AREA **Science/Math/Computer Science** 4 courses from at least 2 disciplines. Courses used in this area must be at least 3 credits.	Choose from the following courses: **ASC**-175, 176, 177; **BI**-101, 102, 103, 112, 160 & 160L, 165C & 165CL, 165D, 165T, 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, 252, 253, 254, 256, 261; **PH**-104, 121, 122, 123, 201, 202, 203, 211, 212, 213; **Z**-201, 202, 203
Cultural Literacy Students must select 1 course from any of the disciplines that is designated as meeting the statewide criteria for cultural literacy. Courses in this area must be at least 3 credits.	Courses meeting the Cultural Literacy requirement are noted with an asterisk.
Computer Science Specific Requirements A 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. 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 the Career Technical Programs, pages 81-152, for a listing of courses that may be included in the 12 credits mentioned above.

Note: Placement in RD-115 and/or WR-121 is recommended for courses on this page and in some cases, placement in MTH-105 or MTH-111 may also be recommended. See course descriptions, pages 153-250.

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

Student Planner Worksheet 2016-2017

Associate of Science Oregon Transfer Degree-Computer Science (ASOT-Computer Science)

This guide is to be used for educational planning/advising purposes only.

Requirements	CCC Courses Completed	Transferred Courses	Credits Earned	Credits Needed
Writing WR-121, 122 or 227, minimum 8 credits				
Oral Communications COMM-111 or COMM-112				
Mathematics 2 courses, MTH-251 and MTH-252 are required.				
Health/Wellness/Fitness 1 or more HE, HPE or PE courses totaling at least 3 credits.				
Arts & Letters* Select a minimum of 3 courses from at least 2 disciplines. Each course must be a minimum of 3 credits.				
Social Science* Select a minimum of 4 courses from at least 2 disciplines. Each course must be a minimum of 3 credits.				
Science/Math/Computer Science Select a minimum of 4 courses from at least 2 disciplines including at least 3 laboratory courses in biological and/or physical science. Each course must be a minimum of 3 credits.				
Cultural Literacy Students must select 1 course from any of the discipline studies that is designated as meeting the statewide criteria for cultural literacy. Each course must be a minimum of 3 credits.				
Computer Science Specific Requirements Students must take a minimum of 16 credits. CS-160, CS-161, CS-162, and CS-260 are required. Each course in this area must be at least 3 credits.				
Elective Courses and/or University Specific Requirements Complete additional courses to bring the total number of credits to at least 90. Refer to your transfer school for specific university requirements. Up to 12 credits of career technical courses may be used.				
	TOTALS			

Additional Graduation Requirements

- ☐ All courses must be passed with a grade of C or better
- ☐ Complete a minimum of 90 credits
- ☐ Complete at least 23 credits at CCC
- ☐ Establish cumulative GPA of 2.0 or above

Total minimum of 90 credits required.

Submit a Petition for Graduation form to Graduation Services two terms prior to when you expect to graduate.

No course may be used to satisfy more than one requirement or distribution area.
Courses used in these areas must be at least three credits. See list on page 54 for approved courses.
See page 44 for additional information on general requirements for graduation.

Students are encouraged to work closely with an academic advisor if they are planning to transfer to a four-year institution upon completion of these programs. Call 503-594-3475 or email: *advising@clackamas.edu* for more information.

Student Guide 2016-2017

Associate of Science Degree (AS)

Clackamas Community College

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

Student Planner Worksheet 2016-2017

Associate of Science Degree (AS)

This guide is to be used for educational planning/advising purposes only.

Requirements	Credits/Courses Required	CCC Courses Taken/ Completed	Credits Transferred	Credits/Courses Needed
Writing	*2 courses*			
Mathematics	*1 course*			
Arts & Letters	*3-4 courses*			
Social Science	*2-3 courses*			
Science/Math/ Computer Science	*1 course*			
University-Specific Requirements	*See specific degree and institution for list of approved courses.*			
Electives	*See specific degree and institution for list of approved courses.*			
TOTALS	**90 credits minimum**			

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.

Students are encouraged to work closely with an academic advisor if they are planning to transfer to a four-year institution upon completion of these programs. Call 503-594-3475 or email: *advising@clackamas.edu* **for more information.**

Associate of Science Degrees

Biology

Associate of Science Transfer Degrees in Biology

Students receiving an Associates 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*, Lilly Mayer, 503-594-3356 or *lillym@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 REQUIREMENTS—FIRST YEAR

FALL TERM		CREDITS
BI-211	General Biology for Science Majors (Cellular Biology)	5
CH-221	General Chemistry	5
PE-185	PE Activity Course	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
Credits required for degree		*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, 102, 103, 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, 215, 230; **ENG**-104, 105, 106, 107, 108, 109, 201, 202, 203, 204, 205, 213, 240, 241, 242, 250, 251, 252, 253, 254, 255; **ESR**-171, 172, 173; **G**-101, 102, 103, 201, 202, 203; **GEO**-100, 110, 121, 122, 130, 208, 230; **GS**-104, 105, 106, 107; **HST**-101, 102, 103, 201, 202, 203; **MUS**-206; **PH**-104, 121, 122, 123, 201, 202, 203, 211, 212, 213; **PHL**-102, 215; **PS**-200, 201, 203, 204, 205, 206, 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 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-123	English Composition	
or WR-227	Technical Report Writing	3-4
— —	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	4-5
MTH-243	Statistics I	
or MTH-251	Calculus I	5
PH-201	General Physics	5
— —	Core elective	3
WINTER TERM		
CH-242	Organic Chemistry II or Science elective	4-5
MTH-244	Statistics II	
or MTH-252	Calculus II	5
— —	Core elective	3
SPRING TERM		
CH-243	Organic Chemistry III or Science elective	6-7
— —	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 p.50 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 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-123	English Composition	3-4
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		*91*

CORE ELECTIVES

Any General Education course in the respective distribution areas of Arts & Letters or Social Sciences listed on p.50 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 is 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 game increases. We encourage all students interested in this program to pursue a co-enrollment option with the university. For information contact Debra Carino, 503-594-3170 or *dcarino@clackamas.edu*

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

Continued

Computer Science continued…

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;
- use mathematical and scientific knowledge to logically/programmatically model physical events,
- describe why and how to use several complex data structures to store and manipulate data in software applications,
- 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,
- exhibit good teamwork skills and serve as effective members of project teams,
- transfer smoothly into a related Bachelor of Science program at a four-year college or university.

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

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:

- CS-120 Survey of Computing
- WR-095 Paragraph to Essay
- MTH-112 Trigonometry/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	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	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	Physics with Calculus	5
CS-260	Data Structures	4
MTH-253	Calculus III	5
— —	Arts & Letters or Social Science electives	3-4
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
— —	Computer Science recommended 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
— —	Computer Science recommended electives	3-4
— —	Computer Science recommended electives	3-4
— —	Arts & Letters or Social Science electives	3-4
Credits required for degree		*90-106*

ARTS & LETTERS OR SOCIAL SCIENCE ELECTIVES

Any 100 level or above Arts & Letters or Social Science course in the prefixes of:

ARTS & LETTERS

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

SOCIAL SCIENCE

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

COMPUTER SCIENCE RECOMMENDED ELECTIVES

Students must choose 12-16 credits from the following two categories. Students do not need to complete all of the electives within any one category.

- **OPERATING SYSTEMS**

  Transfer students will be expected to be fluent with UNIX/Linux systems used in university labs. These courses, CS-140 and CS-240L, will help students with no Linux experience build the necessary competencies.

- **ADDITIONAL LANGUAGES**

  These courses, CS-125H, CS-133S, CS-234J, and CS-234P, will help students expand their language repertoire to enhance their marketability and job opportunities.

SCIENCE ELECTIVES

Any General Education science course listed under prefixes: BI, CH, ESR, G, and PH on p.50 of this catalog.

Engineering

The Associate of Science with an emphasis in Engineering is for students interested in transferring a bachelor's degree to George Fox University, Oregon Tech (Oregon Institute of Technology) or Portland State 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 George Fox University

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
CS-162	Introduction to Computer Science II	4
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
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 or EC-202	Principles of Economics: MICRO or Principles of Economics: MACRO	4
WR-122	English Composition	4

PROGRAMMING REQUIREMENTS—SECOND YEAR

FALL TERM		CREDITS
ENGR-211	Statics	4
ENGR-221	Electrical Circuit Analysis	4
MTH-254	Vector Calculus	5
PH-211	General Physics with Calculus	5
WINTER TERM		
COMM-111	Public Speaking	4
ENGR-222	Electrical Circuit Analysis II	4
MTH-256	Differential Equations	4
PH-212	General Physics with Calculus	5
SPRING TERM		
HPE-295	Health & Fitness for Life	3
MTH-261	Linear Algebra	4
PH-213	General Physics with Calculus	5
— —	Social Science elective	4
Credits required for degree		*109*

ELECTIVES

The Engineering degree general education requirements differ from the general education requirements for other students (fewer credits are required.) An engineering major must complete the following before graduation.

- 6 credits Social Science (note that the EC-201 or 202 counts toward this requirement.) Also, one of the following is required for engineering majors: PS-200, PSY-110, SOC-204.
- 8-9 credits Humanities/Arts & Letters. Each course must be in a different area of the Humanities/Arts & Letters.
- 3 credits Global and Cultural Understanding.
- 6 credits in Communications (note that WR-121, WR-122 and COMM-111 are already listed above and together meet the requirement.)

A student may transfer a maximum of 64 credits to George Fox University.

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

PROGRAM REQUIREMENTS—FIRST YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
COMM-111	Public Speaking	4
MTH-251	Calculus I	5
WR-121	English Composition	4
WINTER TERM		
CH-222	General Chemistry	5
MTH-252	Calculus II	5
WR-122	English Composition	4
— —	Track Requirement	4

Continued

Engineering continued…

SPRING TERM

COMM-219	Small Group Communications	4
WR-227	Technical Writing	4
— —	Social Science elective	4
— —	Track Requirement	4

SUMMER TERM

— —	Track Requirement	8

PROGRAM REQUIREMENTS—SECOND YEAR

FALL TERM		CREDITS
ENGR-221	Electrical Circuit Analysis	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
SPRING TERM		
ENGR-223	Electrical Circuit Analysis III	4
MTH-261	Linear Algebra	4
PH-213	General Physics with Calculus	5
— —	Track Requirement	4
Credits required for degree		*104*

TRACK REQUIREMENTS

ELECTRICAL

CS-161	Computer Science I	4
ENGR-171	Digital Logic	4
ENGR-271	Digital Systems	4
MTH-253	Calculus III	5

RENEWABLE ENERGY

EC-201	Principles of Economics: MICRO	4
or EC-202	Principles of Economics: MACRO	4
ENGR-211	Statics	4
GIS-201	Introduction to Geographic Information System	3
MTH-243	Statistics I	4
MTH-244	Statistics II	4
RET-200	Renewable Energy Systems	4

SOCIAL SCIENCE ELECTIVES

ANT-101, 102, 103, 231, 232; **EC**-200, 201, 202; **GEO**-100, 110, 121, 122, 130, 230; **HST**-101, 102, 103, 130, 131, 132, 136, 137, 138, 201, 202, 203, 210, 220, 239; 200, 201, 203, 204, 205, 206, 225, 297; **PSY**-101, 110, 200, 205, 214, 215, 219, 221, 231, 240; **SSC**-160, 170, 171, 172, 180, 181, 182, 233, 235, 240, 241, 242; **SOC**-204, 205, 206, 210, 225; **WS**-101

RECOMMENDED: 2 ADDITIONAL ARTS & LETTERS/HUMANITIES ELECTIVES

ARTS & LETTERS/HUMANITIES

ART-101, 102, 103, 115, 116, 117, 131, 132, 133. 195, 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**-105, 126, 140, 212, 218, 219, 227; **DMC**-195
ENG-100, 104, 105, 106, 107, 108, 109, 116, 121, 130, 195, 201, 202, 204, 205, 213, 214, 218, 226, 240, 241, 242, 250, 251, 252, 253, 254, 266, 270, 275; **FR**-201, 202, 203, 211; **GER**-201, 202, 203; **HUM**-160, 170, 171, 172, 180, 181, 182, 233, 235, 240, 241, 242
J-211; **MUS**-105, 111, 112, 113, 205, 206, 211, 212, 213; **PHL**-101, 102, 103, 205, 210, 213, 215; **SPN**-201, 202, 203; **TA**-101, 102, 103, 141, 142, 143; **WR**-220, 241, 242, 243, 244, 245, 248, 262, 263, 265, 270

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

Emphasis in Biological Engineering

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	Statistics	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		
ENGR-221	Electrical Circuit Analysis	4
PH-213	General Physics with Calculus	5
— —	Western Culture elective	4
Credits required for degree		*102*

SOCIAL PROCESSES ELECTIVE:

ANT-103; **EC**-201, 202, 230; **HST**-101, 102, 103; **PS**-201, 202, 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, 203, 204, 205, 250, 251, 253, 254, 255, 275; **GEO**-122, 208, 230; **HST**-101, 102, 103, 201, 202, 203; **PHL**-102, 215; **PS**-206; **R**-204

Optional: While not required for the A.S. 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-230, 231, 232; **ENG**-210, 213, 252; **GEO**-110, 121, 230; **R**-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 102, 103, 204, 205, 206, 211, 212, 213; **DMC**-194; **ENG**-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 203, 204, 205, 213, 250, 251, 252, 253, 254, 255, 260, 275; **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 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

PROGRAM REQUIREMENTS—SECOND YEAR

FALL TERM		CREDITS
CH-241	Organic Chemistry I	5
ENGR-211	Statistics	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		
ENGR-221	Electrical Circuit Analysis	4
PH-213	General Physics with Calculus	5
— —	Western Culture elective	4
Credits required for degree		*98*

SOCIAL PROCESSES ELECTIVE

ANT-103; **EC**-201, 202, 230; **HST**-101,102,103; **PS**-201, 202, 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, 203, 204, 205, 250, 251, 253, 254, 255, 275; **GEO**-122, 208, 230; **HST**-101,102,103, 201, 202, 203; **PHL**-102, 215; **PS**-206; **R**-204

Optional: While not required for the A.S. 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-230, 231, 232; **ENG**-210, 213, 252; **GEO**-110,121, 230; **R**-101,102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 102, 103, 204, 205, 206, 211, 212, 213; **DMC**-194; **ENG**-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 203, 204, 205, 213, 250, 251, 252, 253, 254, 255, 260, 275; **MUS**-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203; **SOC**-225

BIOLOGICAL SCIENCE ELECTIVE

ASC-200, 201, 202; **BI**-101, 102, 103, 204, 211, 212, 213, 234; **ESR**-171, 172, 173; **Z**-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Civil Engineering

PROGRAM REQUIREMENTS—FIRST YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
EC-201	Principles of Economics: MICRO	4
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
WR-121	English Composition	4
SPRING TERM		
COMM-111	Public Speaking	4
ENGR-115	Engineering Graphics	3
MTH-254	Vector Calculus	5
WR-227	Technical Report Writing	4
SUMMER TERM		
GIS-201	Introduction to Geographic Information System	3
MTH-256	Differential Equations	4

PROGRAM REQUIREMENTS—SECOND YEAR

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

Continued

Engineering continued…

WINTER TERM		
ENGR-212	Dynamics	4
MTH-253	Calculus III	5
PH-212	General Physics with Calculus	5
SPRING TERM		
ENGR-213	Strength of Materials	4
ENGR-221	Electrical Circuit Analysis	4
PH-213	General Physics with Calculus	5
Credits required for degree		*97*

WESTERN CULTURE ELECTIVE

ART-204, 205, 206; **ENG**-107, 108, 109, 201, 202, 203, 204, 205, 250, 251, 253, 254, 255, 275; **GEO**-122, 208, 230; **HST**-101, 102, 103, 201, 202, 203; **PHL**-102, 215; **PS**-206; R-204

Optional: While not required for the A.S. 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-230, 231, 232; **ENG** 210, 213, 252; **GEO**-110, 121, 230; **R**-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 102, 103, 204, 205, 206, 211, 212, 213; **DMC**-194; **ENG**-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 203, 204, 205, 213, 250, 251, 252, 253, 254, 255, 260, 275; **MUS**-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203; **SOC**-225

BIOLOGICAL SCIENCE ELECTIVE

ASC-200, 201, 202; **BI**-101, 102, 103, 204, 211, 212, 213, 234; **ESR**-171, 172, 173; **Z**-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Ecological Engineering

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
— —	Social Processes Elective	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	Statistics	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		*103*

SOCIAL PROCESSES ELECTIVE

ANT-103; **EC**-201, 202, 230; **HST**-101, 102, 103; **PS**-201, 202, 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, 203, 204, 205, 250, 251, 253, 254, 255, 275; **GEO**-122, 208, 230; **HST**-101, 102, 103, 201, 202, 203; **PHL**-102, 215; **PS**-206; **R**-204

Optional: While not required for the A.S. 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-230, 231, 232; **ENG**-210, 213, 252; **GEO**-110, 121, 230; **R**-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 102, 103, 204, 205, 206, 211, 212, 213; **DMC**-194; **ENG**-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 203, 204, 205, 213, 250, 251, 252, 253, 254, 255, 260, 275; **MUS**-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203; **SOC**-225

BIOLOGICAL SCIENCE ELECTIVE

ASC-200, 201, 202; **BI**-101, 102, 103, 204, 211, 212, 213, 234; **ESR**-171, 172, 173; **Z**-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Electrical Engineering

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	4
MTH-254	Vector Calculus	5
PH-211	General Physics with Calculus	5

WINTER TERM

ENGR-171	Digital Logic	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
Credits required for degree		*98*

SOCIAL PROCESSES ELECTIVE

ANT-103; **EC**-201, 202, 230; **HST**-101, 102, 103; **PS**-201, 202, 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, 203, 204, 205, 250, 251, 253, 254, 255, 275; **GEO**-122, 208, 230; **HST**-101, 102, 103, 201, 202, 203; **PHL**-102, 215; **PS**-206; **R**-204

Optional: While not required for the A.S. 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-230, 231, 232; **ENG**-210, 213, 252; **GEO**-110, 121, 230; **R**-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 102, 103, 204, 205, 206, 211, 212, 213; **DMC**-194; **ENG**-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 203, 204, 205, 213, 250, 251, 252, 253, 254, 255, 260, 275; **MUS**-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203; **SOC**-225

BIOLOGICAL SCIENCE ELECTIVE

ASC-200, 201, 202; **BI**-101, 102, 103, 204, 211, 212, 213, 234; **ESR**-171, 172, 173; **Z**-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Energy Systems Engineering

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-253	Calculus III	5
WR-227	Technical Report Writing	4

SUMMER TERM

MTH-256	Differential Equations	4

PROGRAM REQUIREMENTS—SECOND YEAR

FALL TERM		CREDITS
BA-211	Financial Accounting I	4
ENGR-211	Statics	4
ENGR-221	Electrical Circuit Analysis	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

MTH-254	Vector Calculus	5
PH-213	General Physics with Calculus	5
— —	Engineering elective	3-4
— —	Western Culture elective	4
Credits required for degree		*98-99*

ENGINEERING ELECTIVE

ENGR-115, 213, 223

WESTERN CULTURE ELECTIVE

ART-204, 205, 206; **ENG**-107, 108, 109, 201, 202, 203, 204, 205, 250, 251, 253, 254, 255, 275; **GEO**-122, 208, 230; **HST**-101, 102, 103, 201, 202, 203; **PHL**-102, 215; **PS**-206; **R**-204

Optional: While not required for the A.S. 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-230, 231, 232; **ENG**-210, 213, 252; **GEO**-110, 121, 230; **R**-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 102, 103, 204, 205, 206, 211, 212, 213; **DMC**-194; **ENG**-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 203, 204, 205, 213, 250, 251, 252, 253, 254, 255, 260, 275; **MUS**-105, 205, 206

Continued

Engineering continued…

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203; **SOC**-225

BIOLOGICAL SCIENCE ELECTIVE

ASC-200, 201, 202; **BI**-101, 102, 103, 204, 211, 212, 213, 234; **ESR**-171, 172, 173; Z-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Environmental Engineering

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		
ENGR-213	Strength of Materials	4
MTH-253	Calculus III	5
PH-213	General Physics with Calculus	5
Credits required for degree		*105*

SOCIAL PROCESSES ELECTIVE

ANT-103; **EC**-201,202,230; **HST**-101,102,103; **PS**-201, 202, 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, 203, 204, 205, 250, 251, 253, 254, 255, 275; **GEO**-122, 208, 230; **HST**-101, 102, 103, 201, 202, 203; **PHL**-102, 215; **PS**-206; **R**-204.

Optional: While not required for the A.S. 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-230, 231, 232; **ENG**-210, 213, 252; **GEO**-110, 121, 230; **R**-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 102, 103, 204, 205, 206, 211, 212, 213; **DMC**-194; **ENG**-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 203, 204, 205, 213, 250, 251, 252, 253, 254, 255, 260, 275; **MUS**-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203; **SOC**-225

BIOLOGICAL SCIENCE ELECTIVE

ASC-200, 201, 202; **BI**-101, 102, 103, 204, 211, 212, 213, 234; **ESR**-171, 172, 173; **Z**-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE-295

Emphasis in Industrial/Manufacturing Engineering

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
MTH-253	Calculus III	5
PH-212	General Physics with Calculus	5

SPRING TERM		
ENGR-213	Strength of Materials	4
ENGR-221	Electrical Circuit Analysis	4
PH-213	General Physics with Calculus	5
Credits required for degree		*94*

SOCIAL PROCESSES ELECTIVE

ANT-103; **EC**-201, 202, 230; **HST**-101, 102, 103; **PS**-201, 202, 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, 203, 204, 205, 250, 251, 253, 254, 255, 275; **GEO**-122, 208, 230; **HST**-101, 102, 103, 201, 202, 203; **PHL**-102, 215; **PS**-206; **R**-204.

Optional: While not required for the A.S. 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-230, 231, 232; **ENG**-210, 213, 252; **GEO**-110, 121, 230; **R**-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 102, 103, 204, 205, 206, 211, 212, 213; **DMC**-194; **ENG**-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 203, 204, 205, 213, 250, 251, 252 , 253, 254, 255, 260, 275; **MUS**-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203; **SOC**-225

BIOLOGICAL SCIENCE ELECTIVE

ASC-200, 201, 202; **BI**-101, 102, 103, 204, 211, 212, 213, 234; **ESR**-171, 172, 173; **Z**-201, 202, 203

PHYSICAL EDUCATION ELECTIVE

HPE 295

Emphasis in Mechanical Engineering

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 or EC-202	Principles of Economics: MICRO 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	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
MTH-253	Calculus III	5
PH-213	General Physics with Calculus	5
Credits required for degree		*98*

WESTERN CULTURE ELECTIVE

ART-204, 205, 206; **ENG**-107, 108, 109, 201, 202, 203, 204, 205, 250, 251, 253, 254, 255, 275; **GEO**-122, 208, 230; **HST**-101, 102, 103, 201, 202, 203; **PHL**-102, 215; **PS**-206; **R**-204.

Optional: While not required for the A.S. 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-230, 231, 232; **ENG**-210, 213, 252; **GEO**-110, 121, 230; **R**-101, 102, 103, 210

LITERATURE AND THE ARTS ELECTIVE

ART-101, 102, 103, 204, 205, 206, 211, 212, 213; **DMC**-194; **ENG**-104, 105, 106, 107, 108, 109, 194, 195, 201, 202, 203, 204, 205, 213, 250, 251, 252, 253, 254, 255, 260, 275; **MUS**-105, 205, 206

DIFFERENCE, POWER, AND DISCRIMINATION ELECTIVE

HST-201, 202, 203; **SOC**-225

BIOLOGICAL SCIENCE ELECTIVE

ASC-200, 201, 202; **BI**-101, 102, 103, 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 Portland State University

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		
ENGR-112	Engineering Programming	3
MTH-252	Calculus II	5
WR-122 or WR-227	English Composition Technical Report Writing	4
— —	Track Requirement	3-4

Continued

Engineering continued…

SPRING TERM

MTH-261	Linear Algebra	4
— —	Track Requirement	6-7
— —	Track Requirement	3-4
— —	Arts & Letters electives	3-4

PROGRAM REQUIREMENTS—SECOND YEAR

FALL TERM **CREDITS**

PH-211	General Physics with Calculus	5
— —	Track Requirement	6
— —	Track Requirement	3-4
— —	Track Requirement	3-4

WINTER TERM

COMM-111	Public Speaking	4
MTH-256	Differential Equations	4
PH-212	General Physics with Calculus	5
— —	Track Requirement	3-4

SPRING TERM

PH-213	General Physics with Calculus	5
— —	Track Requirement	3-4
— —	Social Science elective	4
— —	Arts & Letters or Social Science elective	4
Credits required for degree		*96-104*

*Note: Mechanical Engineers should take WR-122. All other tracks should take WR-227

ARTS & LETTERS OR SOCIAL SCIENCE ELECTIVES

ARTS & LETTERS

ART-101, 102, 103, 204, 205, 206; **ASL**-101, 102, 103, 201, 202, 203, 211; **COMM**-100, 105, 112, 126, 129, 140, 150, 167, 212, 218, 219, 227, 267; **ENG**-100, 104, 105, 106, 107, 108, 109, 116, 121, 130, 194, 195, 201, 202, 204, 205, 213, 214, 217, 218, 225, 226, 230, 240, 241, 242, 250, 251, 252, 253, 254, 255, 261, 266, 270, 295, 296; **FR**-101, 102, 103, 201, 202, 203, 211, 212, 213; **GER**-101, 102, 103, 201, 202, 203, 211, 212, 213; **HUM**-160, 170, 180, 181, 182, 233, 235, 240, 241, 242; **MUS**-105, 140, 141, 205, 206, 230, ; **PHL**-101, 102, 103, 205, 210, 213, 215; **SPN**-101, 102, 103, 201, 202, 203, 211, 212, 213; **WR**-123, 140, 146, 200, 220, 222, 239, 240, 241, 242, 243, 244, 245, 246, 249, 262, 263, 270, 279

SOCIAL SCIENCE

ANT-101, 102, 103, 231, 232; **EC**-200, 201, 202; **GEO**-100, 110, 121, 122, 130, 230; **HST**-101, 102, 103, 130, 131, 132, 136, 137, 138, 201, 202, 203, 210, 220, 239; **PS**-200, 201, 203, 204, 205, 206, 225, 297; **PSY**-101, 110, 200, 205, 214, 215, 219, 221, 231, 240; **SSC**-160, 170, 180, 181, 182, 233, 235, 240, 241, 242; **SOC**-204, 205, 206, 210, 225; **WS**-101

TRACK REQUIREMENTS

CIVIL ENGINEERING

CDT-103	Computer-Aided Drafting I	4 credits
CH-222	General Chemistry	5 credits
ENGR-211	Statics	4 credits
ENGR-212	Dynamics	4 credits
ENGR-213	Strength of Materials	4 credits
GIS-201	Introduction to Geographic Information System	3 credits
MTH-254	Vector Calculus	5 credits

Recommended: One additional Arts & Letters or Social Science elective, Plane Surveying (CE211) at PSU. 96 total credits at CCC.

COMPUTER ENGINEERING

CS-161	Computer Science I	4 credits
CS-162	Computer Science II	4 credits
CS-260	Data Structures	4 credits
ENGR-171	Digital Logic	4 credits
ENGR-221	Electrical Circuit Analysis	4 credits
ENGR-222	Electrical Circuit Analysis	4 credits
ENGR-271	Digital Systems	4 credits

One additional Arts & Letters/Social Science elective; Recommended: Digital Circuits (ECE-171) and Digital Systems (ECE-271) at PSU. 98 total credits at CCC.

ELECTRICAL ENGINEERING

CS-161	Computer Science I	4 credits
CS-162	Computer Science II	4 credits
ENGR-171	Digital Logic	4 credits
ENGR-221	Electrical Circuit Analysis	4 credits
ENGR-222	Electrical Circuit Analysis	4 credits
ENGR-223	Electrical Circuit Analysis	4 credits
ENGR-271	Digital Systems	4 credits
MTH-254	Vector Calculus	5 credits

Recommended: Digital Circuits (ECE-171) and Digital Systems (ECE-271) at PSU. 100 total credits at CCC.

ENVIRONMENTAL ENGINEERING

BI-101 or BI-211	General Biology; Cellular Biology General Biology for Science Majors (Cellular Biology)	4-5 credits
BI-234	Introductory Microbiology	4 credits
CDT-103	Computer-Aided Drafting	2 credits
CH-222	General Chemistry	5 credits
ENGR-211	Statics	4 credits
ENGR-212	Dynamics	4 credits
ENGR-213	Strength of Materials	4 credits
GIS-201	Introduction to Geographic Information System	3 credits
MTH-254	Vector Calculus	5 credits

Recommended: Microbiology Lab (BI-235) at PSU. 104 total credits at CCC.

MECHANICAL ENGINEERING

CH-222	General Chemistry	5 credits
ENGR-115	Engineering Graphics	3 credits
ENGR-211	Statics	4 credits
ENGR-212	Dynamics	4 credits
ENGR-213	Strength of Materials	4 credits
ENGR-221	Electrical Circuit Analysis	4 credits
MTH-254	Vector Calculus	5 credits

Recommended: One additional Arts & Letters/Social Science elective. 96 total credits at CCC.

English

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

Associate of Science with an emphasis in English with Marylhurst University

PROGRAM REQUIREMENTS—FIRST YEAR

FALL TERM		CREDITS
BI or CH	Lab-Based Science	4
ENG-204	Survey of English Literature, Part 1	
or ENG-205	Survey of English Literature, Part 2	4
MTH-105	Introduction to Contemporary Math	4
WR-121	English Composition	4
WINTER TERM		
CS-120	Survey of Computing	4
ENG-107	World Literature: Ancient	
or ENG-108	World Literature: Medieval through Enlightenment	
or ENG-109	World Literature: Romantic through Modern	4
HST-101	History of Western Civilization	4
WR-122	English Composition	4
SPRING TERM		
COMM-111	Public Speaking	4
ENG-201	Shakespeare	
or ENG-202	Shakespeare	4
PSY-101	Human Relations	3
WR-200*	Writing About Literature	4
or WR-140**	Introduction to Writing Creatively	
or ENG-270*	Introduction to Literary Criticism	

PROGRAM REQUIREMENTS—SECOND YEAR

FALL TERM		CREDITS
ENG-253	American Literature, Part I	
or ENG-254	American Literature, Part 2	4
HUM-180	Pathways to Sustainability	
or HUM-181	Pathways to Sustainability	
or HUM-182	Pathways to Sustainability	5
— —	Track Requirement	8
WINTER TERM		
ENG-214	The Graphic Memoir	
or ENG-116	Introduction to Literature: Comics	4
WR-222	English Composition	4
— —	Track Requirement	8

Continued

English continued…

SPRING TERM

ENG or WR	English Program Electives	8
HD-186	A Digital You-Building an e-Portfolio	3
R-210	World Religions	4
Credits required for degree		*95*

*Required for Literature Track only

**Required for Creative Writing and Publishing Tracks only

LAB-BASED BIOLOGY OR CHEMISTRY COURSES

BI-101, 102, 103, 112, 160 & 160L, 165C & 165CL, 165D, 165T, 175, 176, 177, 204, 211, 212, 213, 231, 232, 233, 234; **CH**-104, 105, 106, 112, 114, 221, 222, 223

ENGLISH PROGRAM ELECTIVES

8 credits from the following list: **ENG**-121, 125, 130, 194, 195, 215, 217, 218, 225, 226, 240, 241, 242, 250, 251, 252, 255, 260, 261, 266, 270, 275, 295, 296, **WR**-227, 244, 245, 246, 263, 270

TRACK REQUIREMENTS

LITERATURE

ENG-270 and 8 credits from the following: **ENG**-116, 121, 125, 130, 194, 195, 210, 213, 214, 216, 225, 226, 240, 241, 242, 250, 251, 252, 260, 261, 266, 275, 295, 296

CREATIVE WRITING

WR-246 and 8 credits from the following: **WR**-220, 240, 241, 242, 243, 244, 245, 262, 263

PUBLISHING

4 credits from the following: **ART**-115, 131, 132, 133, **WR**-246 and 4 credits from the following: **ENG**-194, 195, 295, 296

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

PROGRAM REQUIREMENTS— FIRST YEAR

FALL TERM		**CREDITS**
ASL-101	First-Year American Sign Language I	
or FR-101	First-Year French I	
or GER-101	First-Year German I	
or SPN-101	First-Year Spanish I	4
HPE-295	Health and Fitness for Life	3
WR-121	English Composition	4
— —	Biological Science elective	4
WINTER TERM		
ASL-102	First-Year Sign Language II	
or FR-102	First-Year French II	
or GER-102	First-Year German II	
or SPN-102	First-Year Spanish III	4
MTH-105	Introduction to Contemporary Math	4
WR-122	English Composition	4
— —	200-level English elective	4
SPRING TERM		
ART-204	History of Western Art	
or ART-205	History of Western Art	
or ART-206	History of Western Art	
or MUS-105	Music Appreciation	3-4
ASL-103	First-Year American Sign Language III	
or FR-103	First-Year French III	
or GER-103	First-Year German 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	
or FR-201	Second-Year French I	
or GER-201	Second-Year German I	
or SPN-201	Second-Year Spanish I	4
— —	200-Level English sequence	
or	200-Level English elective	4
— —	Biological Science	
or	Physical Science	4-5
— —	Speech Elective	4
WINTER TERM		
ASL-202	Second-Year American Sign Language II	
or FR-202	Second-Year French II	
or GER-202	Second-Year German II	
or SPN-202	Second-Year Spanish II	4
— —	200-Level English sequence	4
— —	Cultural Diversity elective	4
— —	Social Processes/Institutions elective	4
SPRING TERM		
ASL-203	Second-Year American Sign Language III	
or FR-203	Second-Year French III	
or GER-203	Second-Year German III	
or SPN-203	Second-Year Spanish III	4
HST-201	History of the United States	
or HST-202	History of the United States	
or HST-203	History of the United States	
or SOC-225	Social Problems	4
— —	200-Level sequence	
or	200-Level English elective	4
— —	Western Culture electives	4
Credits required for degree		*94-97*

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, GER or SPN-101, 102, 103.

BIOLOGICAL SCIENCE ELECTIVES

BI-102, 103, 104, 204, 211, 212, 213, 234

200-LEVEL ENGLISH ELECTIVES

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

PHYSICAL SCIENCE ELECTIVES

G-101, 102, 103, 201, 202, 203; **GS**-107; **PH**-121, 122, 123, 201, 202, 203, 211, 212, 213; **CH**-221, 222, 223

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 ELECTIVE

GEO-121; **R**-101, 102, 103, 210

SOCIAL PROCESSES/ INSTITUTIONS ELECTIVE

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**-122, 208; **HST**-101, 102, 103, 201, 202, 203; **PHL**-102; **PS**-203

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

PROGRAM REQUIREMENTS— FIRST YEAR

FALL TERM		CREDITS
ASL-101	First-Year American Sign Language I	
or FR-101	First-Year French I	
or GER-101	First-Year German I	
or SPN-101	First-Year Spanish I	4
ENG-107	World Literature: Ancient	
or ENG-108	World Literature: Medieval through Enlightenment	
or ENG-109	World Literature: Romantic through Modern	4
MTH-105	Introduction to Contemporary Math	4
WR-121	English Composition	4
WINTER TERM		
ASL-102	First-Year American Sign Language I	
or FR-102	First-Year French I	
or GER-102	First-Year German I	
or SPN-102	First-Year Spanish I	4
ENG-201	Shakespeare	
or ENG-202	Shakespeare	4
HST-101	History of Western Civilization	
or SS elective	Social Science elective	4
PSY-101	Human Relations	
or SS elective	Social Science elective	3-5
WR-122	English Composition	4
SPRING TERM		
ASL-103	First-Year American Sign Language I	
or FR-103	First-Year French I	
or GER-103	First-Year German I	
or SPN-103	First-Year Spanish I	4
HST-201	History of The United States	
or SS elective	Social Science elective	8
WR-200	Writing About Literature	
or WR-140	Introduction to Writing Creatively	
or ENG-270	Introduction to Literary Criticism	4

PROGRAM REQUIREMENTS— SECOND YEAR

FALL TERM		CREDITS
ASL-201	Second-Year American Sign Language I	
or FR-201	Second-Year French I	
or GER-201	Second-Year German I	
or SPN-201	Second-Year Spanish I	4
BI-101	General Biology; Cellular Biology	
or elective	Other Science elective	4-5
ENG-204	Survey of English Literature, Part 1	4
— —	Track Requirement	4
WINTER TERM		
ASL-202	Second-Year American Sign Language II	
or FR-202	Second-Year French II	
or GER-202	Second-Year German II	
or SPN-202	Second-Year Spanish II	4
ENG-253	American Literature, Part 1	4
ENG-205	British Literature, Part 2	4
— —	Track Requirement	4
SPRING TERM		
ASL-203	Second-Year American Sign Language III	
or FR-203	Second-Year French III	
or GER-203	Second-Year German III	
or SPN-203	Second-Year Spanish III	4
ENG-254	American Literature, Part 2	4
HD-186	A Digital You-Building an e-Portfolio	3
— —	English Program elective	4
Credits required for degree		*90-93*

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, GER or SPN-101, 102, 103.

SOCIAL SCIENCE ELECTIVES

ANT-101, 102, 103, 231, 232; **EC**-200, 201, 202; **GEO**-100, 110, 121, 122, 130, 230; **HST**-101, 102, 103, 130, 131, 132, 136, 137, 138, 201, 202, 203, 210, 220, 239; **PS**-200, 201, 203, 204, 205, 206, 225, 297 **PSY**-101, 110, 200, 205, 214, 215, 219, 221, 231, 240; **SSC**-160, 170, 171, 172, 180, 181, 182, 233, 235, 240, 241, 242; **SOC**-204, 205, 206, 210, 225; **WS**-101

OTHER SCIENCE ELECTIVES

BI-102, 103, 112, 160 & 160L, 165C & 165CL, 165D, 165T, 175, 176, 177, 204, 211, 212, 213, 231, 232, 233, 234; **CH**-104, 105, 106, 112, 114, 221, 222, 223

ENGLISH PROGRAM ELECTIVES

4 credits from the following list if not used already in AS to satisfy the degree requirements:
ENG-107, 108, 109, 116, 121, 125, 130, 194, 195, 201, 202, 214, 215, 217, 218, 225, 226, 240, 241, 242, 250, 251, 252, 255, 261, 266, 270, 295, 296; **WR**-227, 244, 245, 246, 263, 270

TRACK REQUIREMENTS

LITERATURE

ENG-270 and 8 credits from the following: **ENG**-116, 121, 125, 130, 194, 195, 210, 213, 214, 216, 225, 226, 240, 241, 242, 250, 251, 252, 260, 261, 266, 275, 295, 296

CREATIVE WRITING

WR-246 and 8 credits from the following: **WR**-220, 240, 241, 242, 243, 244, 245, 262, 263, 265

PUBLISHING

4 credits from the following: **ART**-115, 131, 132, 133, **WR**-246 and 4 credits from the following: **ENG**-194, 195, 295, 296, **WR**-265

Continued

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 Horticulture Department, 503-594-3292 or *loretta@clackamas.edu*

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

PROGRAM REQUIREMENTS—FIRST YEAR

FALL TERM		CREDITS
CH-221	General Chemistry	5
HOR-226*	Plant Identification/Fall	3
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	3
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 Western Art (4)	
or ART-205	History of Western Art (4)	
or ART-206	History of Western Art (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/Pre-Calculus	5
— —	Choose one from the following list:	4
ANT-231	Indians of the Pacific Northwest (4)	
or GEO-110	Cultural & Human Geography (4)	
or R-101	Comparative Religions (4)	
or R-102	Comparative Religions (4)	
or R-103	Comparative Religions (4)	
— —	Choose one from the following list:	4
EC-201	Principles of Economics: MICRO (4)	
or PS-201	American Government & 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
HST-103	History of Western Civilization	
or PHL-102	Ethics	4
HOR-215	Herbaceous Perennials	3
Credits required for degree		*96-98*

* 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

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, asses, 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.

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

PROGRAM REQUIREMENTS—FIRST YEAR

FALL TERM		CREDITS
G-201 & G-201L	General Geology General Geology Lab	4
MTH-111	College Algebra	5
WR-121	English Composition	4
WINTER TERM		
G-202 & G-202L	General Geology General Geology Lab	4
MTH-112	Trigonometry/Pre-Calculus	5
WR-122	English Composition	4
— —	General electives	3-4
SPRING TERM		
COMM-111	Public Speaking	4
G-203 & G-203L	General Geology 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 compliment 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 p. 50 of this catalog.

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 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	Introduction to Contemporary Math	
or MTH-111	College Algebra	
or MTH-112	Trigonometry/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	3
MUS-113L	Music Notation Software I	1
MUS-116	Aural Skills 1	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-211L	Music Notation Software II	1
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-212L	Music Notation Software II	1
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

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-213L	Music Notation Software II	1
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		*103-110*

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

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

ARTS & LETTERS

ART-101, 102, 103, 115, 116, 117, 131, 132, 133. 195, 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**-105, 126, 140, 212, 218, 219, 227; **DMC**-195; **ENG**-100, 104, 105, 106, 107, 108, 109, 116, 121, 130, 195, 201, 202, 204, 205, 213, 214, 218, 226, 240, 241, 242, 250, 251, 252, 253, 254, 266, 270, 275; **FR**-201, 202, 203, 211; **GER**-201, 202, 203; **HUM**-160, 170,180, 181, 182, 231, 235, 240, 241, 242; J-211; **MUS**-105, 111, 112, 113, 205, 206, 211, 212, 213; **PHL**-101, 102, 103, 205, 210, 213, 215; **SPN**-201, 202, 203; **TA**-101, 102, 103, 141, 142, 143; **WR**-220, 241, 242, 243, 244, 245, 248, 262, 263, 265, 270

SOCIAL SCIENCE

ANT-101, 102, 103, 231, 232; **CJA**-101; **EC**-115, 200, 201, 202; **GEO**-100, 110, 121, 122, 130, 208, 230; **HST**-101, 102, 103, 130, 131, 132, 136, 137, 138, 201, 202, 203, 210, 220; **PS**-200, 201, 203, 204. 205, 206, 225, 297; **PSY**-200, 205, 214, 215, 219, 221, 231; **SOC**-204, 205, 206, 210, 225; **SSC**-160, 170,180, 181, 182, 231, 235, 240, 241, 242; **WS**-101

SCIENCE/MATH/COMPUTER SCIENCE

ASC-175, 176, 177; **BI**-101, 102, 103, 112, 160 & 160L, 165C & 165CL, 165D, 165T, 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**-104, 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 2016-2017

Associate of General Studies Degree (AGS)

Requirements	Credit/Courses Required
Writing - 1 course	WR-121
Communication - 1 course	COMM-111 or COMM-112
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, 102, 103, 115, 116, 117, 131, 132, 133, 194, 195, 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**-105, 126, 140, 212, 218, 219, 227; **DMC**-195; **ENG**-100, 104, 105, 106, 107, 108, 109, 116, 121, 130, 170, 195, 201, 202, 204, 205, 206, 213, 214, 218, 226, 240, 241, 242, 250, 251, 252, 253, 254, 266, 275 ; **FR**-201, 202, 203; **GER**-201, 202, 203; **HUM**-160, 170, 180, 181, 182, 231, 235, 240, 241, 242; **J**-211 ; **MUS**-105, 111, 112, 113, 205, 206, 211, 212, 213 ; **PHL**-101, 102, 103, 205, 210, 213, 215 ; **R**-101, 102, 103, 204, 210, 211, 212, 214 ; **SPN**-201, 202, 203 ; **TA**-101, 102, 103, 141, 142, 143 ; **WR**-220, 241, 242, 243, 244, 245, 248, 262, 265, 263, 270
Social Science - 4 credits	**ANT**-101, 102, 103, 230, 231, 232; **CJA**-101 **EC**-200, 201, 202; **GEO**-100, 110, 121, 122, 130, 208, 230; **HST**-101, 102, 103, 136, 137, 138, 201, 202, 203, 210, 220; **PS**-200, 201, 203, 204, 205, 206, 225, 297; **PSY**-200, 205, 214, 215, 219, 221, 231; **SOC**-204, 205, 206, 210, 225; **SSC**-160, 170, 231, 235, 240, 241, 242; **WS**-101
Science/Math/Computer Science - 4 credits	**ASC**-175, 176, 177; **BI**-101, 102, 103, 112, 113, 160 & 160L, 165C & 165CL, 165D, 165T, 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**-111, 112, 212, 213, 243, 244, 251, 252, 253, 254, 256, 261; **PH**-104, 121, 122, 123, 201, 202, 203, 211, 212, 213; **Z**-201, 202, 203
Computer Competency - 1 course	**CS**-120, **BA**-131 or **MFG**-109
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 44 additional information on general requirements for graduation

Student Planner Worksheet 2016-2017

Associate of General Studies Degree (AGS)

This guide is to be used for educational planning/advising purposes only.

Requirements	Credits/Courses Required	CCC Courses Taken/ Completed	Credits Transferred	Credits/Courses Needed
Writing	*1 course*			
Communication	*1 course*			
Mathematics	*1 course*			
Health & Physical Education	*One course with an HE, HPE or PE prefix, or MFG-107*			
Arts & Letters	*1 course*			
Social Science	*1 course*			
Science/Math/ Computer Science	*1 course*			
Computer Competency	*1 course*			
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 minimum**			

Additional graduation requirements:

- ☐ 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 44 additional information on general requirements for graduation

Student Guide 2016-2017

Oregon Transfer Module (OTM)

Clackamas Community College

Note: For the most current list of General Education courses, go to: *www.clackamas.edu/curriculum*

	Requirements	Courses *Choose from the following courses to meet requirements.*
Foundational Skills	**Writing** - 2 courses)	WR-121 and either 122, or 227
Introduction to Disciplines	**Oral Communication** - 1 course	COMM-111, 112
	Mathematics - 1 course	MTH-105, 111, 112, 211, 251
	Arts & Letters - 3 courses	Choose from the following: **ART**-101, 102, 103, 115, 116, 117, 131, 132, 133, 194, 195, 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**-105, 126, 140, 212, 218, 219, 227; **DMC**-195; **ENG**-100, 104, 105, 106, 107, 108, 109, 116, 121, 130, 201, 202, 204, 205, 213, 214, 216, 218, 226, 240, 241, 242, 250, 251, 252, 253, 254, 266, 270, 275; **FR**-201, 202, 203; **GER**-201, 202, 203; **HUM**-160, 170, 180, 181, 182, 231, 235, 240, 241, 242; **J**-211; **MUS**-105, 111, 112, 113, 205, 206, 211, 212, 213; **PHL**-101, 102, 103, 205, 210, 213, 215; **R**-101, 102, 103, 204, 210, 211, 212, 214; **SPN**-201, 202, 203; **TA**-101, 102, 103, 141, 142, 143; **WR**-220, 241, 242, 243, 244, 245, 248, 262, 263, 265, 270
	Social Science - 3 courses	Choose from the following list: **ANT**-101, 102, 103, 230, 231, 232 ; **CJA**-101; **EC**-200, 201, 202; **GEO**-100, 110, 121, 122, 130, 208, 230; **HST**-101, 102, 103, 130, 131, 132, 136, 137, 138, 201, 202, 203, 210, 220; **PS**-200, 201, 203, 204, 205, 206, 225, 297; **PSY**-200, 205, 214, 215, 219, 221, 231; **SOC**-204, 205, 206, 210, 225; **SSC**-160, 170, 231, 235, 240, 241, 242; **WS**-101
	Science/Math/Computer Science - 3 courses	Choose from the following courses: **ASC**-175, 176, 177; **BI**-101, 102, 103, 112, 113, 160 & 160L, 165C & 165CL, 165D, 165T, 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**-212, 213, 243, 244, 252, 253, 254, 256, 261; **PH**-104, 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.

Student Planner Worksheet 2016-2017

Oregon Transfer Module (OTM)

This guide is to be used for educational planning/advising purposes only.

Requirements	Courses Required	CCC Courses Completed	Transferred Courses	Courses/ Credits Earned	Courses Needed
Writing WR-121, and either 122 or 227	*2*				
Oral Communications COMM-111, 112	*1*				
Mathematics MTH-105, 111, 112, 211, 251	*1*				
Arts & Letters	*3*				
Social Science	*3*				
Science/Math/Computer Science Select 3 courses including at least 1 lab course in the biological or physical sciences.	*3*				
Elective Courses Courses must be from the introduction to Disciplines areas (Arts & Letters, Social Science, or Science/Math/ Computer Science)	*will vary*				
	TOTALS				

(Total minimum of 45 credits required.)

Additional Requirements

- ☐ Complete a minimum of 45 credits
- ☐ Complete at least 11 credits at CCC
- ☐ Establish cumulative GPA of 2.0 or above at the time the module is posted

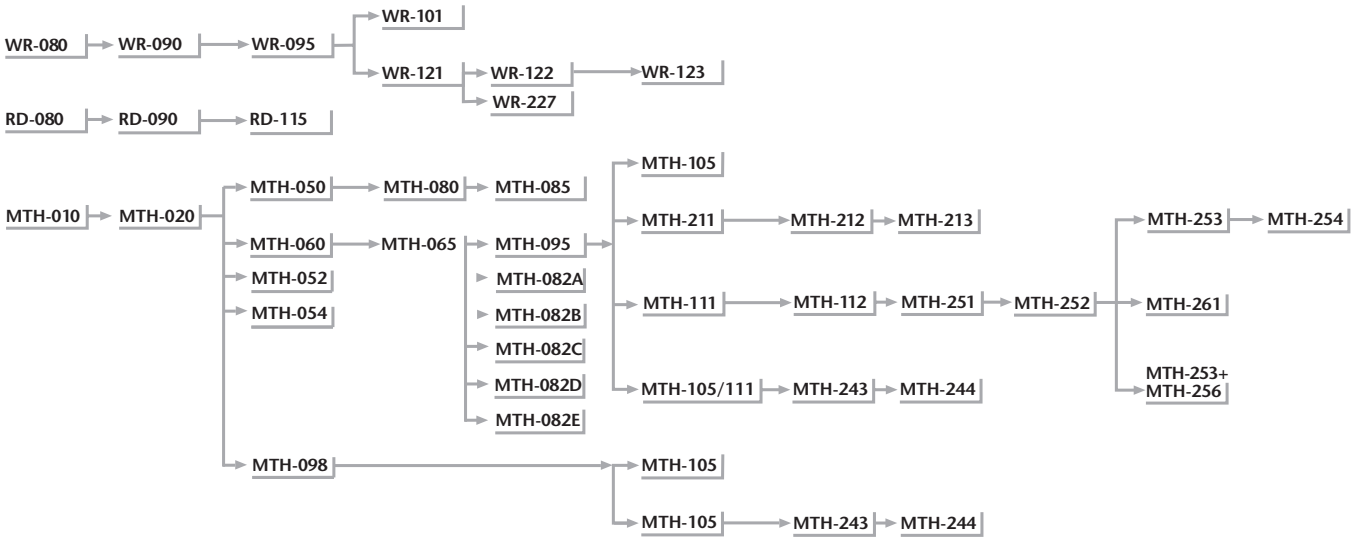
Note: All courses must be 100 level or higher. All courses must be at least three credits. All courses must be passed with a grade of "C" or better. No course may be used to satisfy more than one requirement or distribution area.

The OTM is not a certificate or degree, but is documentation that students have met a subset of common general education requirements.

Students are encouraged to work closely with an academic advisor if they are planning to transfer to a four-year institution upon completion of these programs. Call 503-594-3475 or email: *advising@clackamas.edu* for more information.

Prerequisites for Reading, Writing and Math Courses

This chart of reading, writing and math prerequisites 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. Use your placement scores to find which course you "placed" in, register to take that course first.



Career Technical Programs

www.clackamas.edu

Education That Works

Clackamas Community College

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, 123, 222, 227, BA-214

Computation

Computer Science: CS-133VB, 161, 162, 163
Mathematics: MTH-050, 052, 054, 065 or above (except 199 and 299)

Human Relations

Business: BA-285
Criminal Justice: CJA-250
Education: ED-258
Human Services: HS-156
Oral Communication: COMM-100, 100A, 100B, 100C, 105, 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 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-Students.aspx*)
  - 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

Associate of Applied Science Degree

PROGRAM CODE: AAS.ACCNTG

The Accounting 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 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 Associate of Applied Science articulates to a Bachelor of Applied Science in Technology and Management at Oregon Tech.

For information contact Michael Moiso, 503-594-3770 or *mmoiso@clackamas.edu*

PROGRAM OUTCOMES

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

- accurately analyze, journalize, and adjust accounting transactions and closing entries;
- accurately analyze and interpret basic financial statements,
- accurately prepare basic budgets,
- identify and explain the basics of general fund accounting as used in municipal governments,
- identify and explain basic tax concepts with regard to individuals, partnerships, and corporations;
- identify and explain the issues and objectives auditors face during the audit of financial statements,
- accurately prepare product cost sheets in order to price manufacture goods,
- accurately prepare accounting records for a business entity using Quickbooks.

CAREERS

Career opportunities include GS8 Accountant I, bookkeeper, data-entry clerk, financial staff accountant, cost accountant and general office clerk.

For information contact Michael Moiso, 503-594-3770 or *mmoiso@clackamas.edu*

ACCOUNTING ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-211	Financial Accounting I	4
BA-226	Business Law I	4
WR-121	English Composition	4
WINTER TERM		
BA-131	Introduction to Business Computing	4
BA-156	Business Forecasting	3
BA-177	Payroll Accounting	3
BA-212	Financial Accounting II	4
BA-251	Supervisory Management	3
SPRING TERM		
BA-205	Business Communications with Technology	4
BA-213	Decision Making with Accounting Information	4
BA-218	Personal Finance	4
BA-285	Human Relations in Business	4

ACCOUNTING ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-223	Principles of Marketing	4
BA-256	Income Tax Accounting	3
— —	PE/Health/Safety/First Aid requirement (see page 82)	1
— —	Any BA/BT course not already included in the Accounting AAS program	3
WINTER TERM		
BA-206	Management Fundamentals	4
BA-216	Cost Accounting	3
BA-222	Financial Management	3
BA-227	Business Law II	4
SPRING TERM		
BA-217	Budgeting for Managers	3
BA-225 or WR-227	Business Report Writing Technical Report Writing	3-4
BA-228	Computerized Accounting	3
BA-255	Advanced Topics in Accounting & Auditing	4
BA-280	Business/CWE	3
Credits required for degree		*93-94*

* For this degree, BA-104 meets the Related Instruction Computation requirement.

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. Graduates of this certificate program can specialize in tax preparation or general accounting assistant work.

PROGRAM OUTCOMES

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

- accurately analyze, journalize, and adjust accounting transactions and closing entries;
- accurately analyze and interpret basic financial statements,
- accurately prepare and account for basic payroll,
- accurately prepare basic budgets.

CAREERS

Career opportunities include accounts payable clerk, accounts receivable clerk and data entry clerk for small and medium-sized service businesses.

For information contact Michael Moiso, 503-594-3770 or *mmoiso@clackamas.edu*

continued

Accounting Clerk continued…

ACCOUNTING CLERK CERTIFICATE

FIRST TERM		CREDITS
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-211	Financial Accounting I	
or BA-111	General Accounting I	4
WR-121	English Composition	4
SECOND TERM		
BA-131	Introduction to Business Computing	4
BA-156	Business Forecasting	3
BA-177	Payroll Accounting	3
BA-212	Financial Accounting II	
or BA-112	General Accounting II	4
BA-251	Supervisory Management	3
THIRD TERM		
BA-205	Business Communications with Technology	4
BA-213	Decision Making with Accounting Information	4
BA-226	Business Law I	4
BA-280	Business/CWE	3
BA-285	Human Relations in Business	4
Credits required for certificate		*51*

* For this certificate, BA-104 meets the Related Instruction Computation requirement.

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

Administrative Office Professional

Associate of Applied Science Degree

PROGRAM CODE: AAS.ADMINOFFPRO

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.

PROGRAM OUTCOMES

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

- effectively and independently use Microsoft Office (Word, Excel, Access, and PowerPoint), Adobe Professional, and Google Applications;
- identify and analyze organizational and planning procedures in business office operations,
- identify and analyze effective working relationships and Human Resources practices within a business or office environment,
- articulate, analyze, and apply basic business math and accounting skills common to business operations;
- analyze the concepts, rules, and principles of law applying to effective business practices.

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 OFFICE PROFESSIONAL ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-131	Introduction to Business Computing	4
BT-121	Data Entry	1
BT-122	Keyboard Skillbuilding	2
BT-124	Business Editing I	3
WINTER TERM		
BA-111	General Accounting	
or BA-211	Financial Accounting I	4
BT-125	Business Editing II	3
BT-160	Word I	3
CS-135S	Microsoft Excel	3
— —	Administrative Office Professional program electives	3
SPRING TERM		
BA-228	Computerized Accounting	3
BT-161	Word II	3
BT-172	Introduction to Microsoft Outlook	2
BT-216	Office Procedures	4
WR-121	English Composition	4

ADMINISTRATIVE OFFICE PROFESSIONAL ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-218	Personal Finance	4
BA-226	Business Law I	4
BA-285	Human Relations in Business	4
BT-262	Integrated Projects	4
WINTER TERM		
BA-104*	Business Math	3
BA-205	Business Communications with Technology	4
BA-206	Management Fundamentals	4
— —	PE/Health/Safety/First Aid requirement (see page 82)	1
— —	Administrative Office Professional program electives	3
SPRING TERM		
BA-224	Human Resource Management	4
BA-280	Business/CWE	3
BT-271	Advanced Business Projects	4
— —	Administrative Office Professional program electives	3
Credits required for degree		*91*

*For this degree, BA-104 meets the Related Instruction Computation requirement

ADMINISTRATIVE OFFICE PROFESSIONAL PROGRAM ELECTIVES

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

Administrative Office Assistant

Certificate

PROGRAM CODE: CC.ADMINOFFTRNG

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.

PROGRAM OUTCOMES

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

- identify and analyze effective working relationships and Human Resources practices within a business or office environment,
- identify and analyze the skills necessary for effective business office operations,
- effectively use of Microsoft Office (Word, Excel, Access, and PowerPoint);
- apply correct English grammar in a business office environment,
- apply key concepts in the full cycle bookkeeping process,
- effectively apply basic math skills as required in business and financial environments.

CAREERS

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

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

ADMINISTRATIVE OFFICE ASSISTANT CERTIFICATE

FALL TERM		CREDITS
BA-104*	Business Math	3
BA-131	Introduction to Business Computing	4
BT-121	Data Entry	1
BT-122	Keyboarding Skillbuilding	2
BT-124	Business Editing I	3
WR-121	English Composition	4
WINTER TERM		
BA-285	Human Relations in Business	4
BT-125	Business Editing II	3
BT-160	Word I	3
CS-135S	Microsoft Excel	3
— —	Any BA/BT course not already included in the Administrative Office Assistant program	4
SPRING TERM		
BA-111 or BA-211	General Accounting I Financial Accounting I	4
BA-280	Business/CWE	3
BT-161	Word II	3
BT-172	Introduction to Microsoft Outlook	2
BT-216	Office Procedures	4
Credits required for certificate		*50*

* For this certificate, BA-104 meets the Related Instruction Computation requirement.

Administrative Office Assistant Training

Certificate

PROGRAM CODE: CC.ADMINOFFASST1

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 Office Assistant (one-year) certificate program.

PROGRAM OUTCOMES

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

- identify and analyze organizational and planning procedures in business office operations,
- effectively use Microsoft Office Outlook (email, calendar, and meeting scheduling);
- effectively use Microsoft Office Word,
- apply correct English grammar in a business office environment,
- analyze and apply basic computer literacy, including typing by touch,
- apply key concepts in the full cycle bookkeeping process,
- effectively apply basic math skills as required in business and financial environments.

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 OFFICE ASSISTANT TRAINING CERTIFICATE

COURSE		CREDITS
BA-104	Business Math	3
BA-111	General Accounting I	4
BT-120	Personal Keyboarding	2
BT-122	Keyboard Skillbuilding	2
BT-124	Business Editing I	3
BT-125	Business Editing II	3
BT-160	Word I	3
BT-161	Word II	3
BT-172	Introduction to Microsoft Outlook	2
BT-216	Office Procedures	4
Credits required for certificate		*29*

Apprenticeship

Certificate
Associate of Applied Science Degree

PROGRAM CODES: VARIES ACCORDING TO TRADE. SEE APPRENTICESHIP COORDINATOR.

Apprenticeship programs are approved for BOLI registered apprentices and are not available to the general student population. For more information about Oregon State registered apprenticeship programs, visit: *www.oregon.gov/BOLI/ATD/Pages/A_Atdopen.aspx* or contact the Apprenticeship and Training Division at 971-673-0760 for program and entrance requirements.

In conjunction with the Oregon State Apprenticeship Council, the Apprenticeship and Training Division (ATD), of the Bureau of Labor and Industry (BOLI), and local Joint Apprenticeship Training Committees (JATC), Clackamas Community College offers apprenticeship programs for the different trades. Clackamas' Apprenticeship model offers educational trainings to prepare students for careers in the trades, provides statewide transfer opportunities, ladder-type certificates of completion, and an optional transfer path into Bachelor of Science degrees at Oregon Tech.

Clackamas offers a Certificate of Completion (CC) and an Associate of Applied Science (AAS) degree in Electrician Technologies Apprenticeship for Inside Electrician, Limited Energy Technician-License A, Limited Energy Technician-License B (CC only), Line Estimator, Lineman, Meterman, and Wireman; a Certificate of Completion and an Associate of Applied Science degree in Construction Trades, General Apprenticeship for Plumbers and Painters.

An apprentice has the opportunity to receive a certificate of completion (CC) and/or Associate of Applied Science degree (AAS) in their designated field of study upon the completion of their OJT, related training, journey level card/Certificate and the required Related Instruction courses and possible elective courses, depending on the trade.

For more information on Clackamas' apprenticeship certificates and degrees, please contact Leslie Donohue at 503-594-3031 or *apprenticeship@clackamas.edu*

RELATED TRAINING

The related training is usually available from a nearby community college, employer, or union-based training program. The related training courses are based on ATD and local JATC-approved related training courses developed to meet industry standards. The related training provides the theories and background information that a person may not otherwise be exposed to working on the job. This technical knowledge complements the on-the-job training during the apprenticeship program and requires at least 144 hours per year. The course of study relates to the specific craft (electrician, plumber, etc.). The related training is a vital component that provides the apprentice with a solid background from which to continue learning and growing to meeting the changing demands of the workplace.

APPRENTICE

Upon completion of an apprenticeship program, the worker has enjoyed the opportunity to work with qualified craft workers and has learned the theories and science of the craft from qualified instructors. In addition, the apprentice receives an Apprenticeship Certificate of Completion that is recognized by companies nationwide. This certificate is one of the most basic and highly potable industry credentials in use today.

PROGRAM OUTCOMES

Construction Trades, General Apprenticeship AAS Degree (Limited Entry Program-Journeyman's card required)

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),
- repair, install and maintain a variety of building construction projects using trade specific tools and techniques in compliance with building codes and OSHA regulations,
- complete required related training with a C or better,
- complete required General Education instruction courses and general electives with a C or better.

CAREERS

6000-8000 Hours BOLI-ATD Trades: Asbestos Removal, Carpenter, HVAC/R, Interior/Exterior Finisher, Painter, Pile Driver, Plumber, Scaffold Erector, and Sheet Metal. (This degree does not guarantee licensure.)

PROGRAM OUTCOMES

Electrician Apprenticeship Technologies AAS Degree (Limited Entry Program-Journeyman's card required)

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

- complete the 6000-8000 hours State of Oregon-approved on-the-job training,
- apply theory to electrical wiring,
- repair, install electrical wire devices according to licensure regulations to meet NEC and OSC for inside electrician, limited energy technician license A, limited manufacturing plant electrician, sign assembler/fabricator, sign maker/erector, and stationary engineer;
- complete required related training with a C or better,
- complete required General Education instruction courses and general electives with a C or better.

CAREERS

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

8000 hour BOLI-ATD Trades: Hydro Generation, Inside Electrician, Line Estimator, Lineman, Manufacturing Plant Electrician, Meterman, Sign Assembler/Fabricator, Sign Maker/Erector and Stationary Engineer, and Wireman. (This degree does not guarantee licensure.)

PROGRAM OUTCOMES

Construction Trades, General Apprenticeship Certificate of Completion Degree (Limited Entry Program-Journeyman's card required)

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),
- repair, install and maintain a variety of building construction projects using trade specific tools and techniques in compliance with building codes and OSHA regulations;
- complete required related training with a C or better.

CAREERS

6000-8000 hour BOLI-ATD Trades: Asbestos Removal, Carpenter, HVAC/R, Interior/Exterior Finisher, Painter, Pile Driver, Plumber, Scaffold Erector, and Sheet Metal. (This degree does not guarantee licensure.)

PROGRAM OUTCOMES

Electrician Apprenticeship Technologies Certificate of Completion Degree (Limited Entry Program-Journeyman's card required)

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

- complete the 6000-8000 hours State of Oregon-approved on-the-job training,
- apply theory to electrical wiring,
- repair and install electrical wire devices according to licensure regulations to meet NEC and OSC for inside electrician, limited energy technician license A, limited manufacturing plant electrician, sign assembler/fabricator, sign maker/erector, and stationary engineer;
- complete required related training with a C or better.

CAREERS

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

8000 hour BOLI-ATD Trades: Inside Electrician, Manufacturing Plant Electrician, Sign Assembler/Fabricator, Sign Maker/Erector and Stationary Engineer. (This degree does not guarantee licensure.)

PROGRAM OUTCOMES

Electrician Apprenticeship Technologies, Limited Electrician Technologies Certificate of Completion Degree (Limited Entry Program-Journeyman's card required)

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

- complete 4000 hours State of Oregon-approved on-the-job training (OJT),
- repair or install electrical wire devices according to limited licensure regulations to meet NEC and OSC for limited inside electrician—license B, limited maintenance electrician, limited renewable energy technician, and limited residential electrician;
- complete required related training with a C or better.

CAREERS

4000 hour BOLI-ATD Trades: Limited Energy Technician—license B, Limited Maintenance Electrician, Limited Renewable Energy Technician, and Limited Residential Electrician. (This degree does not guarantee licensure.)

Arboriculture

Associate of Applied Science Degree

PROGRAM CODE: AAS.ARBORICULTURE

This degree prepares students for entry-level positions in commercial arboriculture and urban forestry, while enhancing their ability to move into management positions. Students will gain practical expertise in the establishment and caring for landscape trees, including planting, pruning, pest management, tree diagnostics, and operating industry standard equipment. Additionally, students will learn skills in communicating with customers, both orally and through report writing.

Sustainable practices, such as the use of Integrated Pest Management, low water use 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 trees and shrubs.

Students may begin this program any term, but some courses have prerequisites, which must be taken first. Following the course offerings in the order listed is not required, but will allow for completion in a two year period.

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,
- pass the International Society of Arboriculture's Certified Arborist exam,
- pass the ODA Pesticide Laws & Safety exam, and the ODA Ornamental & Turf Insecticide/Fungicide exam.

continued

Arboriculture continued…

CAREERS

As a graduate of our Arboriculture program, you will be prepared to work as a tree-climber or plant care technician for a tree care company, parks department, or as a self-employed arborist.

For information contact Horticulture Department, 503-594-3292 or *lorettam@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-226	Plant Identification/Fall	3
HOR-236	Insect Identification	2
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level of math)	3-5
WINTER TERM		
HOR-131	Tree & Shrub Pruning/Winter	3
HOR-216	Integrated Pest Management	3
HOR-225	Arboriculture I	3
HOR-230	Equipment Operation & Maintenance	2
HOR-237	Disease Identification	2
HOR-239	Tree Climber Training	1
SPRING TERM		
BA-285	Human Relations in Business	
or COMM-100	Basic Speech Communication	3-4
HOR-120	Pesticides Laws & Safety	1
HOR-228	Plant Identification/Spring	3
HOR-261	Tree Diagnostics	2
WR-121	English Composition	
or BA-214	Business Communication	3-4
SUMMER TERM		
HOR-211	Native Plant Identification	1
SPN-101	First Year Spanish 1	4

ARBORICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
HOR-123	Landscape Maintenance	3
HOR-223	Applied Plant Science	3
HOR-260	Arboriculture II	3
HOR-262	Aerial Treework Practicum I	2
WINTER TERM		
BA-119	Project Management Practices	2
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	3
HOR-229*	Introduction to Landscape Design	
or HOR-244*	Environmental Landscape Design	3
— —	Arboriculture program electives	5
SPRING TERM		
HOR-215	Herbaceous Perennials	3
HOR-140	Soils	3
HOR-263	Plant Health Care Practicum	2
HOR-280	Horticulture/CWE (in Arboriculture field)	3
— —	Arboriculture program electives	4
SUMMER TERM		
HOR-281	Horticulture/CWE (in Arboriculture field)	6
HOR-282	Horticulture/CWE (in Arboriculture field)	3
Credits required for degree		*93-97*

ARBORICULTURE PROGRAM ELECTIVES

COURSE		CREDITS
BA-250	Small Business Management	3
HOR-134	Herb Growing & Gardening	1
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
HOR-231	Irrigation & Drainage Design	3
HOR-235	Weed Identification	2
HOR-240	Irrigation & Drainage Practices	3
HOR-244*	Environmental Landscape Design	3
HOR-264	Aerial Treework Practicum II	2
SPN-102	First Year Spanish 2	4

*Currently offered alternate years.

**Course may be waived with current CPR certification.

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 certificate qualifies students to apply for an I-CAR Non-structional Technician Pro Level I and I-CAR Refinish Technician Pro Level I 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;
- 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, 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 Dave Bradley, 503-594-3051, or the Automotive 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	3-4
SECOND TERM		
AM-223	Hybrid Service Technology	3
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
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-CCCONE	2
AB-280	Collision Repair/CWE	6
ABR-142	Airbrush Art	
or ABR-152	Custom Painting Fundamentals	
or ABR-162	Basic Automotive Pinstriping	2
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
Credits required for degree		*92-94*

* Program requirements: Current enrollment in or successful completion of AB-112 Collision Repair Welding I and ABR-125 Collision Repair Refinishing I must be completed or in progress prior to enrolling in ABR-127 Collision Repair Refinishing

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 course 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 an I-CAR Pro Level 1 Certification.

continued

Auto Body/Collision Repair Refinishing continued…

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, and Audatex 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 Dave Bradley, 503-594-3051, or the Automotive Department, 503-594-3047.

AUTO BODY/COLLISION REPAIR REFINISHING CAREER PATHWAY CERTIFICATE

FIRST TERM		CREDITS
AB-113	Collision Repair I/Nonstructural	6
AB-149	Collision Repair Estimating I	2
ABR-125	Collision Repair Refinishing I	6
SECOND TERM		
AB-223	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
Credits required for certificate		*42*

* Program requirements: AB-112 Collision Repair Welding I and ABR-125 Collision Repair Refinishing I must be completed or be in progress prior to enrolling in ABR-127 Collision Repair Refinishing II.

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.

PROGRAM OUTCOMES

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

- perform inspections on major automotive systems, including steering, suspension, and brakes;
- demonstrate and perform testing and servicing on all hybrid systems,
- understand and perform basic repairs to automotive electrical systems,
- diagnose, service, test and repair modern automotive brake systems, including ABS and traction control/vehicle stability systems;
- diagnose, service, and repair front and rear suspensions of different designs;
- diagnose and repair engine problems, including cylinder head and valvetrain, block, reciprocating assembly, and cooling system;
- service and repair fuel storage and delivery systems, electronic fuel injection systems and emission controls;
- rebuild manual and automatic transmissions, for both front and rear wheel drive vehicles.
- practice safety precautions to protect yourself, vehicles and the environment.
- communicate clearly with team members and customers.
- conduct yourself on the job with a high degree of professionalism
- use service literature and tools efficiently
- practice a systematic diagnostic and repair strategy to maintain modern automobiles and light trucks

CAREERS

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

For information contact Jay Leuck, 503-594-3052 or *jayl@clackamas.edu*, or the Automotive 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	3-4
SPRING TERM		
AM-223	Hybrid Service Technology	3
AM-133	Engine Systems	7
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: PSY-101 or COMM-100**)	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
Credits required for degree		*93-95*

*May be taken after the first year

Note: Alternative course schedule is available. Contact the Automotive 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:

- understand and perform basic repairs to automotive electrical systems,
- perform inspections on major automotive systems, including steering, suspension, and brakes;
- diagnose, service, and repair front and rear suspensions of different designs;
- demonstrate and perform testing and servicing on all hybrid systems,
- rebuild manual and automatic transmissions, for both front and rear wheel drive vehicles;
- diagnose, service, test and repair modern automotive brake systems, including ABS and traction control/vehicle stability systems;
- diagnose, service, and repair front and rear suspensions of different designs.

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 Jay Leuck, 503-594-3052 or *jayl@clackamas.edu*, or the Automotive Department, 503-594-3047.

continued

Under Car Technician-Automatic Transmission continued…

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
Credits required for certificate		*40*

ASE ALIGNMENT

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

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:

- understand and perform basic repairs to automotive electrical systems,
- diagnose, service, test and repair modern automotive brake systems, including ABS and traction control/vehicle stability systems;
- diagnose, service, and repair front and rear suspensions of different designs;
- demonstrate and perform testing and servicing on all hybrid systems,
- perform inspections on major automotive systems, including steering, suspension, and brakes;
- diagnose, repair, or rebuild manual transmissions, transfer cases, and differentials in front, rear, and all wheel drive vehicles.

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 Jay Leuck, 503-594-3052 or *jayl@clackamas.edu*, or the Automotive 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 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
Credits required for certificate		*40*

ASE ALIGNMENT

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

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:

- perform inspections on major automotive systems, including steering, suspension, and brakes;
- understand and perform basic repairs to automotive electrical systems,
- service and repair fuel storage and delivery systems, electronic fuel injection systems and emission controls;
- diagnose and repair engine problems, including cylinder head and valvetrain, block, reciprocating assembly, and cooling system;
- diagnose and repair electrical accessories, gauges, warning devices, and information systems;
- diagnose computerized engine controls and ignition systems,
- diagnose and repair heating and air conditioning systems.

CAREERS

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

For information contact Jay Leuck, 503-594-3052 or *jayl@clackamas.edu*, or the Automotive 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-224	Comfort Systems	4
AM-133	Engine Systems	7
AM-228	Service Shop Management	4
Credits required for certificate		*44*

ASE ALIGNMENT

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

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.

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.

continued

Business continued…

OREGON INSTITUTE OF TECHNOLOGY (OREGON TECH) ARTICULATION AGREEMENT

Admission to Oregon Tech is not guaranteed.Students must apply for admission to Oregon Tech in accordance with the then-existing rules, policies and procedures of Oregon Tech.Students are responsible for notifying the Oregon Tech Admissions and Registrar's Office when operating under an articulation agreement to ensure their credits transfer as outlined in this agreement. In order to utilize this agreement, students must be attending Clackamas Community College during the above catalog year. Students must enroll at Oregon Tech within three years of this approval. To transfer CCC's Business AAS degree to Oregon Tech, students must have been enrolled at CCC in 2016-17 and they must transfer to Oregon Tech before or during 2019-20.

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	
or MTH-065	Algebra I	3-4
BA-224	Human Resource Management	4
WR-121	English Composition	4
WINTER TERM		
BA-131	Introduction to Business Computing	4
BA-223	Principles of Marketing	4
BA-285	Human Relations in Business	4
— —	Business program electives	3
SPRING TERM		
BA-205	Business Communications with Technology	4
BA-211	Financial Accounting I	4
BA-226	Business Law I	4
— —	Business program electives	3

BUSINESS ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-206	Management Fundamentals	4
BA-212	Financial Accounting II	4
— —	PE/Health/Safety/First Aid requirement (see page 82)	1
— —	Business program electives	7
WINTER TERM		
BA-213	Decision Making with Accounting Information	4
— —	Business program electives	12
SPRING TERM		
BA-217	Budgeting for Managers	3
BA-280	Business/CWE	3
WR-227	Technical Report Writing	
or BA-225	Business Report Writing	3-4
— —	Business program electives	7
Credits required for this degree:		*93-95*

* For this degree, BA-104 meets the Related Instruction Computation requirement.

BUSINESS PROGRAM ELECTIVES

Any Business Administration (BA) or Business Technology (BT) course not included in the Business AAS program; or up to 12 credits from CS-125P, CS-125R, CS-133VB, CS-135DB, CS-135I, CS-135S, CS-135W, EC-201, EC-202, COMM-111, MTH-111, MTH-243, and MTH-244 may also be used to satisfy program electives.

Business Management

Certificate

PROGRAM CODE: CC.BUSMANAGEMENT

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

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

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-131	Introduction to Business Computing	4
BA-211	Financial Accounting I	4
WR-121**	English Composition	4
WINTER TERM		
BA-223	Principles of Marketing	4
BA-226	Business Law I	4
BA-251	Supervisory Management	3
BA-285	Human Relations in Business	4

SPRING TERM		
BA-205	Business Communications with Technology	4
BA-206	Management Fundamentals	4
BA-217	Budgeting for Managers	3
BA-224	Human Resource Management	4
BA-280	Business/CWE	3
Credits required for certificate		*52*

* For this certificate, BA-104 meets the Related Instruction Computation requirement. BA-104 requires completion of MTH-050 or higher as pre-requisite.

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

WR-121 requires completion of WR-095 or placement into WR-121.

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
Credits required for certificate		*18*

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

WR-121 requires completion of WR-095 or placement into WR-121.

Human Resource Management

Certificate

PROGRAM CODE: CC.HUMANRESMNGT

This certificate is recommended for students and/or professionals currently working in the human resource field who wish to obtain national certification in Professional in Human Resources (PHR) from the Human Resource Certification Institute. Though this certificate is intended to enhance the qualifications of people already working in the human resource field, others may wish to take the classes to advance their own skills and knowledge.

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-211	Financial Accounting I	4
BA-224	Human Resource Management	4
BA-226	Business Law I	4
WR-121	English Composition	4
WINTER TERM		
BA-177	Payroll Accounting	3
BA-206	Management Fundamentals	4
BA-208	Employee Labor Relations	4
BA-285	Human Relations in Business	4
BA-104*	Business Math	
or MTH-065	Algebra II	3-4

continued

Human Resource Management continued…

SPRING TERM		
BA-131	Introduction to Business Computing	4
BA-229	Employment Law	4
BA-254	Basic Compensation and Benefits	4
BA-280	Business/CWE	3
Credits required for certificate		*53-54*

* For this certificate, BA-104 meets the Related Instruction Computation requirement.

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

Human Resource Management Essentials

Career Pathway Certificate

PROGRAM CODE: CC.HRESSENTIALS

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 and Benefits	4
BA-285	Human Relations in Business	4
Credits required for certificate		*16*

Courses in this program can be applied to satisfy requirements in the Human Resource Management certificate.

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.

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-223 Principles of Marketing, BA-238 Sales, BA-239 Advertising, and BA-261 Consumer Behavior.

For information contact Dale Hatfield, 503-594-3074 or *daleh@clackamas.edu*

MARKETING CERTIFICATE

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-131	Introduction to Business Computing	4
BA-239	Advertising	4
WR-121	English Composition	4

WINTER TERM

BA-104*	Business Math	3
BA-156	Business Forecasting	3
BA-223	Principles of Marketing	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
BA-280	Business/CWE	3
Credits required for certificate		*49*

* For this certificate, BA-104 meets the Related Instruction Computation requirement.

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 strategy 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 Dale Hatfield, 503-594-3074 or *daleh@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
Credits required for certificate		*16*

Courses in this program can be applied to satisfy requirements in the Marketing certificate.

Clinical Laboratory Assistant

Certificate

PROGRAM CODE: CC.CLINABASST

Clinical laboratory assistants serve a diverse ancillary role assisting other laboratory personnel, physicians and patients. Their duties may include data entry, laboratory billing practices, 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 (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/Programs/Clinical-Laboratory-Assistant.aspx*

Applicants are advised that a high level of dexterity, the ability to multi-task, 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 2003, or previous college coursework as documented on official college transcripts. To be eligible to apply, students must show placement by: 1) passing WR-095 or placement in WR-101; 2) passing RD-090 or placement in RD-115.
- 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.

continued

Clinical Laboratory Assistant continued…

- Provide; 1) proof of a recent physical examination by a licensed healthcare provider, 2) required immunizations, 3) a current AHA or 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.

PROGRAM OUTCOMES

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

- demonstrate the ability to serve in an entry-level role as a clinical laboratory assistant,
- demonstrate proficiency in all types in blood collection techniques,
- understand and apply all laboratory regulations, standard operating procedures, Health and safety issues, and Quality Assurance;
- understand the roles of all laboratory personnel,
- demonstrate knowledge of health care delivery model and how clinical laboratories are an integrated part of patient care,
- successfully pass the Clinical Laboratory Assistant/ Phlebotomy entry-level certification examinations.

CLINICAL LABORATORY ASSISTANT APPLICATION REQUIREMENTS

Application packets with admission procedures and requirements are available online:
www.clackamas.edu/Programs/Clinical-Laboratory-Assistant.aspx

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.

For continuing education opportunities for healthcare providers see Healthcare Professional Development (HPD) in the course description section on page 210.

OREGON INSTITUTE OF TECHNOLOGY (OREGON TECH) ARTICULATION AGREEMENT

Admission to Oregon Tech is not guaranteed. Students must apply for admission to Oregon Tech in accordance with the then-existing rules, policies and procedures of Oregon Tech. Students are responsible for notifying the Oregon Tech Admissions and Registrar's Office when operating under an articulation agreement to ensure their credits transfer as outlined in this agreement. In order to utilize this agreement, students must be attending Clackamas Community College during the above catalog year. Students must enroll at Oregon Tech within three years of this approval. To transfer CCC's Business AAS degree to Oregon Tech, students must have been enrolled at CCC in 2016-17 and they must transfer to Oregon Tech before or during 2019-20.

For more information, contact:
health-sciences-questions@clackamas.edu

CLINICAL LABORATORY ASSISTANT 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	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4

CLINICAL LABORATORY ASSISTANT CERTIFICATE

FALL TERM		CREDITS
BI-120*	Introduction to Human Anatomy & Physiology	4
CLA-100	Introduction to Healthcare	2
CLA-101	Clinical Laboratory Assistant Skills I	3
CLA-101L	Clinical Laboratory Assistant Skills I Lab	1
CLA-118	Phlebotomy for Clinical Laboratory Assistants	1
CLA-118L	Phlebotomy for Clinical Laboratory Assistants 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 II Lab	1
CLA-115	Laboratory Administrative Skills	2
CLA-119	Phlebotomy/Laboratory Practicum I	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 III Lab	1
CLA-120	Phlebotomy/Laboratory 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
Credits required for certificate		*51-54*

*Additional options to meet biology requirement: pass with C or better BI-101 & BI-102 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.

Note: 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.

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.

PROGRAM OUTCOMES

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

- accurately interpret technical drawings to determine product manufacturing specifications,
- work safely in an industrial environment around machinery, power tools and chemicals;
- set-up, operate, and make adjustments to both manual and CNC machine tools to produce products to required specifications,
- utilize computer software to create 2D and 3D CAD models as well as 2D, 3D, and multi-axis CAM generated programs for machining processes;
- apply knowledge of materials, physics and mathematics to solve manufacturing problems;
- plan manufacturing operations in a logical and efficient manner to produce products on both manual and CNC machine tools,
- work both independently and In a team environment to achieve a high quality value stream.

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 Manufacturing 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 Manufacturing Department for more information, 503-594-3318.

COMPUTER-AIDED MANUFACTURING
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FIRST TERM		CREDITS
CDT-102	Sketching and Problem Solving	3
MFG-111	Machine Tool Fundamentals I	6
MTH-050**	Technical Mathematics I	3
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	Applied Geometric Dimensioning & 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 & Operation	4
MFG-204	Computer-Aided Manufacturing I	4
— —**	Human Relations requirement (see page 82)	3
FIFTH TERM		
MFG-202	CNC II: Programming & Operation	4
MFG-205	Computer-Aided Manufacturing II	4
MFG-209	Programming & Automation for Manufacturing	3
MFG-107	Industrial Safety & First Aid	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		*97*

COMPUTER-AIDED MANUFACTURING PROGRAM ELECTIVES

Any course with a CDT, EET, MFG, RET or WLD prefix.

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

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 or placement out of BA-131 Introduction to Business Computing, WR-095 Paragraph to Essay and MTH-065 Algebra II. This is an open program. Students may take any class in the program for which they have completed the prerequisite.

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 Rich Albers, 503-594-3166, or *richa@clackamas.edu*; Debra Carino, 503-594-3170 or *dcarino@clackamas.edu*; Rick Carino, 503-594-3167 or *rcarino@clackamas.edu*; Jen Miller, 503-594-31318, or *jen.miller@clackamas.edu*

COMPUTER & NETWORK ADMINISTRATION CERTIFICATE

FALL TERM		CREDITS
CS-140	Introduction to Operating Systems	4
CS-150	Computer Technician Orientation	3
CS-225	Computer End-User Support	3
CS-227	Computer Hardware & Repair	4
WINTER TERM		
CS-179	Networking I	3
CS-228	Computer OS Maintenance & Repair	4
CS-240W	Windows Desktop Administration	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
SPRING TERM		
CS-229	Networking II	4
CS-240L	Linux Administration	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
Credits required for certificate		*51-53*

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
Credits required for degree		*91-96*

COMPUTER & NETWORK ADMINISTRATION PROGRAM ELECTIVES

Complete 9-12 credits from the following:

COURSE		CREDITS
BA-101 or BA-103	Introduction to Business or 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 Support

Certificate
Associate of Applied Science Degree

PROGRAM CODE: CC.COMPAPPSUPP

The Computer Application Support program prepares students for a variety of technical support careers including help desk, training, and design positions. Students may earn either a one-year certificate or a 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 experience that supplements the academic classroom environment.

For students interested in pursuing a bachelor's degree, the Computer Application Support Associate of Applied Science articulates to a Bachelor of Applied Science in Technology and Management at Oregon Tech.

For information contact Debra Carino, 503-594-3170 or *dcarino@clackamas.edu*

PROGRAM REQUIREMENTS

Prerequisites for first term classes include completed course work for CS-120 Survey of Computing, WR-095 Paragraph to Essay and MTH-065 Algebra II or placement in BA-131 Introduction to Business Computing, 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.

PROGRAM OUTCOMES

Computer Application Support AAS 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,
- using 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.

PROGRAM OUTCOMES

Computer Application Support 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.

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 Debra Carino, 503-594-3170 or *dcarino@clackamas.edu*

continued

Computer Application Support continued…

COMPUTER APPLICATION SUPPORT CERTIFICATE

FALL TERM		CREDITS
CS-140	Introduction to Operating Systems	4
CS-150	Computer Technician Orientation	3
CS-225	Computer End-User Support	3
CS-227	Computer Hardware & Repair	4
WINTER TERM		
CS-125H	HTML & Web Site Design	3
CS-135W	Microsoft Word	3
CS-179	Networking I	3
CS-240W	Windows Desktop Administration	3
SPRING TERM		
BA-103	Business Strategies for Computer Consultants	3
CS-135I	Advanced Web Design with Dreamweaver	3
CS-135S	Microsoft Excel	3
CS-240L	Linux Administration	4
SUMMER TERM		
CS-280	Computer Science/CWE	3
— —	Computation requirement (see page 82)	3
WR-101 or WR-121	Communication Skills: Occupational Writing English Composition	3-4
— —	Human Relations requirement (see page 82)	3
Credits required for certificate:		*51-52*

COMPUTER APPLICATION SUPPORT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

COMPUTER APPLICATION SUPPORT ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
ART-225	Computer Graphics I	3
CS-133VB	Visual Basic.NET I	3
CS-135DB	Microsoft Access	3
— —	Focus Area	4-6
WINTER TERM		
CS-133S	Introduction to JavaScript & Server Side Scripting	3
CS-195	Flash Web Development	3
CS-275	Database Design	3
— —	PE/Health/Safety/First Aid requirement (see page 82)	1
— —	Focus Area	4-6
SPRING TERM		
CS-280	Computer Science/CWE	6
— —	Focus Area	4-6
— —	Computer Application Support program elective	3
Credits required for degree		*91-93*

ADDITIONAL COURSES FROM FOCUS AREA

Complete all courses from one of the following Focus Areas:

APPLICATION SUPPORT

COURSE		CREDITS
ART- 226	Computer Graphics II	3
BT-177	Microsoft Project	3
CS-289	Web Server Administration	4
— —	Computer Application Support program elective	3-4

PROGRAMMING

COURSE		CREDITS
CS-161	Computer Science I	4
CS-162	Computer Science II	4
CS-163	Data Structures	4

COMPUTER APPLICATION SUPPORT PROGRAM ELECTIVES

Complete 6-7 credits from the following:

BA-120 Project Management Fundamentals	3
BA-131 Introduction to Business Computing	4
Any Computer Science course numbered CS-125 or higher	

Corrections

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.

PROGRAM OUTCOMES

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

- identify the major steps of the criminal justice process,
- define each step in the criminal justice process, and critically analyze how a case proceeds through the system;
- explain the functions of law enforcement and corrections in the United States in terms of historical roots, structure and contemporary issues;
- describe the role of the criminal court system in the United States,
- communicate effectively both verbally and in writing,
- identify conditions that are specific to working with offenders in an institutional or community setting, and develop strategies for coping with those conditions;
- analyze contemporary issues in the adult and juvenile corrections systems in the United States and outline possible responses to those issues.

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 Ida Flippo, 503-594-3363 or *iflipp@clackamas.edu*

CORRECTIONS ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
CJA-101	Criminology	3
CJA-110	Introduction to Law Enforcement	4
CJA-130	Introduction to Corrections	3
CJA-252	Introduction to Restorative Justice	3
WR-121	English Composition	4
WINTER TERM		
CJA-120	Judicial Process	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
PSY-219	Introduction to Abnormal Psychology	4
WR-122	English Composition	4
SPRING TERM		
CJA-134	Correctional Institutions	3
CJA-243	Drugs, Crime, & the Law	3
CJA-250	Reporting, Recording, & Testifying	4
— —	Corrections program elective	3

CORRECTIONS ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
CJA-122	Criminal Law	4
CJA-170	Introduction to Field Work in Criminal Justice	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	
or HE-205	Youth Addictions	
or HE-255	Body & Alcohol	3
HS-260	Victim Advocacy & Assistance	4
— —	Corrections program elective	3
WINTER TERM		
CJA-203	Crisis Intervention	3
CJA-223	Criminal Justice Ethics	3
CJA-280	Criminal Justice/Corrections/CWE	3
HS-211	HIV, TB, & Infectious Diseases	1
— —	Corrections program elective	3
SPRING TERM		
CJA-201	Juvenile Delinquency	4
CJA-232	Corrections Casework	3
CJA-281	Criminal Justice/Corrections/CWE	3
HS-156	Interviewing Theory & Techniques	3
HS-216	Group Counseling	3
Credits required for degree		*90-91*

CORRECTIONS PROGRAM ELECTIVES

Students select from the following:

COURSE		CREDITS
COMM-126	Communication Between the Sexes	4
COMM-140	Introduction to Intercultural Communication	4
COMM-218	Interpersonal Communication	4
COMM-227	Nonverbal Communication	4
GRN-183	Death and Dying	3
HDF-260	Understanding Child Abuse and Neglect	3
HST-131	History of Crime & Punishment in Western Civilization	4

Any CJA, HS, PHL, PS, PSY, or SOC course not already included in the Corrections AAS program.

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.

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 Ida Flippo, 503-594-3363 or *iflipp@clackamas.edu*

JUVENILE CORRECTIONS CERTIFICATE

FALL TERM		CREDITS
CJA-170	Introduction to Field Work in Criminal Justice	3
CJA-252	Introduction to Restorative Justice	3
HE-205	Youth Addictions	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
WR-121	English Composition	4
WINTER TERM		
CJA-203	Crisis Intervention	3
CJA-280	Criminal Justice/Corrections/CWE	2
PSY-215	Introduction to Developmental Psychology	4
SOC-205	Social Stratification & Social Systems	
or COMM-140	Intercultural Communication	
or ANT-103	Cultural Anthropology	4
— —	Juvenile Corrections program elective	3-4

continued

Juvenile Corrections continued…

SPRING TERM

CJA-201	Juvenile Delinquency	4
CJA-232	Corrections Casework	3
CJA-280	Criminal Justice/Corrections/CWE	2
HDF-140	Contemporary American Families	
or SOC-210	Marriage, Family & Intimate Relations	3-4
HS-156	Interviewing Theory & Technique	
or PSY-221	Introduction to Counseling	3-4
Credits required for certificate		*47-51*

JUVENILE CORRECTIONS PROGRAM ELECTIVES

COURSE		CREDITS
CJA-130	Introduction to Corrections	3
CJA-134	Correctional Institutions	3
CJA-250	Reporting, Recording & Testifying	4
HDF-260	Understanding Child Abuse and Neglect	3
HE-249	Mental Health	3
HS-154	Community Resources	3
HS-211	HIV, TB & Infectious Diseases	1
HS-216	Group Counseling Skills	3

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.

PROGRAM OUTCOMES

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

- identify the major steps of the criminal justice process,
- define each step in the criminal justice process, and critically analyze how a case proceeds through the system;
- explain the functions of law enforcement and corrections in the United States in terms of historical roots, structure and contemporary issues;
- describe the role of the criminal court system in the United States,
- communicate effectively both verbally and in writing,
- apply key United States Supreme Court cases to real-life situations,
- develop strategies for coping with stressors associated with working in law enforcement.

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, 503-594-6424 or *sharron.furno@clackamas.edu*

CRIMINAL JUSTICE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
CJA-101	Criminology	3
CJA-110	Introduction to Law Enforcement	4
CJA-130	Introduction to Corrections	3
WR-121	English Composition	4
— —	Criminal Justice program electives	3
WINTER TERM		
CJA-120	Judicial Process	3
CJA-203	Crisis Intervention	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
WR-122	English Composition	4
SPRING TERM		
CJA-200	Community Policing in a Culturally Diverse Society	4
CJA-243	Drugs, Crime, & the Law	3
CJA-250	Reporting, Recording, & Testifying	4
— —	Criminal Justice program electives	3

CRIMINAL JUSTICE ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
CJA-122	Criminal Law	4
CJA-170	Introduction to Field Work in Criminal Justice	3
CJA-210	Criminal Investigation I	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	
or HE-205	Youth Addictions	
or HE-255	Body & Alcohol	3
PSY-219	Introduction to Abnormal Psychology	4
WINTER TERM		
CJA-211	Criminal Investigation II	3
CJA-223	Criminal Justice Ethics	3
CJA-280	Criminal Justice/Corrections/CWE	3
— —	Criminal Justice program electives	3
SPRING TERM		
CJA-201	Juvenile Delinquency	4
CJA-212	Criminal Investigation III	3
CJA-222	Procedural Law	3
CJA-281	Criminal Justice/Corrections/CWE	3
HS-260	Victim Advocacy & Assistance	4
Credits required for degree		*90-91*

CRIMINAL JUSTICE PROGRAM ELECTIVES

Students select from the following:

COURSE		CREDITS
COMM-126	Communication Between the Sexes	4
COMM-140	Introduction to Intercultural Communication	4
COMM-218	Interpersonal Communication	4
COMM-227	Nonverbal Communication	4
GRN-183	Death and Dying	3
HDF-260	Understanding Child Abuse and Neglect	3
HST-131	History of Crime & Punishment in Western Civilization	4

Any CJA, HS, PHL, PS, PSY, or SOC course not already included in the Criminal Justice AAS program.

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/healthSciences/*

The applicant must follow 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.

PROGRAM OUTCOMES

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

- demonstrate proficiency in exposing, processing, and mounting dental radiographs,
- 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 dental assisting skills to provide dental care,
- demonstrate basic competencies in dental administrative practices,
- utilize dental material for specific dental procedures,
- assist with medical emergencies in the dental office,
- demonstrate Expanded Functions Dental Assistant (EFDA) skills necessary to obtain EFDA certification.

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/HealthSciences/DentalAssistant/

For continuing education opportunities for healthcare providers see Healthcare Professional Development (HPD) in the course description section on page 210.

For more information, contact:
health-sciences-questions@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 or WR-121	Communication Skills: Occupational Writing English Composition	3-4
SECOND TERM		
CS-120	Survey of Computing	4
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

continued

Dental Assistant continued…

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	3-4
PSY-101	Human Relations	3
Credits required for certificate		*56-58*

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

Current Healthcare Provider level CPR (AHA) and First Aid 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.

Note: 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.

PROGRAM OUTCOMES

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

- employ concepts and use terminology reflecting an understanding of two-dimensional design fundamentals in the context of completed multimedia design and/or artistic projects,
- produce a final multimedia project that demonstrates preparedness for entry into a field related to one of the DMC focus areas, and articulate how that project relates to professional opportunities in that field;
- critically analyze and discuss multimedia works in the context of mass media and society,
- demonstrate an awareness of ethical and legal considerations involved when creating multimedia works, including basic professional skills related to documentation and rights licensing for copyright, fair use, etc.;
- complete digital multimedia video projects illustrating professional entry-level competence In planning, production, and editing tools and techniques;
- create or contribute to a comprehensive digital multimedia project in a way that showcases specialized skills in one or more of the following focus areas: Motion Graphics & Computer Animation, Web Design, Journalism, Film Studies, Video Production, Audio & Sound Engineering, or 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, multimedia 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 multimedia, 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.

For information contact Kelly White, 503-594-3034 or *kellyw@clackamas.edu*

DIGITAL MEDIA COMMUNICATIONS
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
ART-115	Basic Design: Two Dimensional Design	4
DMC-100	Introduction to Media Arts	3
WR-121	English Composition	4
— —	PE/Health/Safety/First Aid requirement (see page 82)	1
— —	Digital Media Communications program electives	4
WINTER TERM		
DMC-104	Digital Video Editing	4
COMM-100*	Basic Speech Communication	
or PSY-101	Human Relations	3
MTH-065	Algebra II (or higher level of math)	4
SPRING TERM		
J-211	Mass Media & Society	
or COMM-212	Mass Media & Society	4
— —	Focus Area courses	3-8
— —	Digital Media Communications program electives	8
SUMMER TERM		
DMC-280	Digital Media Communications/CWE	3

DIGITAL MEDIA COMMUNICATIONS
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
— —	Focus Area courses	8-10
— —	Digital Media Communications program electives	10
WINTER TERM		
— —	DMC program electives	7
— —	Focus Area courses	6-8

SPRING TERM

BA-146	Entertainment Law & New Media	3
DMC-191	Digital Media Communications Portfolio Project II	
or DMC-192	Digital Media Communications Portfolio Project III	3-4
HUM-233	Electronic Culture	
or SSC-233	Electronic Culture	4
— —	Focus Area course	4
Credits required for degree		*90*

ADDITIONAL COURSES FROM FOCUS AREA

Complete all courses from one of the following Focus Areas

MOTION GRAPHICS & COMPUTER ANIMATION

COURSE		CREDITS
ART-106	Animation & Motion Graphics I	
or DMC-106	Animation & Motion Graphics I	3
ART-107	Animation & Motion Graphics II	
or DMC-107	Animation & Motion Graphics II	3
ART-131	Drawing	
or ART-132	Drawing	
or ART-133	Drawing for Comics	4
ART-221	2D Animation: Design/Techniques	
or DMC-221	2D Animation: Design/Techniques	3
ART-222	Advanced 2D Animation	
or DMC-222	Advanced 2D Animation	3
ART-225	Computer Graphics I	3
ART-226	Computer Graphics II	3

WEB DESIGN

COURSE		CREDITS
ART-116	Basic Design: Color Theory & Composition	4
ART-227	Computer Graphics III	3
ART-262	Digital Photography & Photo-Imaging	3
BA-103	Business Strategies for Computer Consultants	3
CS-125H	HTML & Web Site Design	3
CS-135I	Advanced Web Design with Dreamweaver	3
CS-181	Content Management Systems	3

JOURNALISM

COURSE		CREDITS
ART-262	Digital Photography	
or ART-225	Computer Graphics I	3
J-134	Photojournalism	4
J-215	College Newspaper Lab: Writing & Photography	3
J-216	Writing for Media	
or J-230	Multimedia Reporting	4
J-220	Introduction to Broadcast Journalism	4
J-221	Broadcast Journalism	
or J-226	Introduction to College Newspaper: Design & Production	4

PUBLISHING

COURSE		CREDITS
WR-148	Self-publishing: Design & Layout	1
WR-149	Introduction to Blogging	1
WR-246	Editing & Publishing	4
WR-248	Bookmaking: Design & Production	4
WR-249	Promoting Publications	4
WR-265	Digital Storytelling	4
WR-240	Creative Writing Non-fiction	
or WR-241	Introduction to Creative Writing: Fiction	
or WR-242	Creative Writing: Poetry	
or WR-243	Creative Writing: Playwriting	4

VIDEO PRODUCTION

COURSE		CREDITS
ART-106	Animation & Motion Graphics I	
or DMC-106	Animation & Motion Graphics I	3
DMC-205	Directing for Film & Video	4
DMC-247	Music, Sound & Moviemaking	
or MUS-247	Music, Sound & Moviemaking	3
DMC-264	Digital Filmmaking	4
DMC-265	Advanced Digital Filmmaking	4
WR-262	Introduction to Screenwriting	4

AUDIO & SOUND ENGINEERING

COURSE		CREDITS
DMC-242	Field Recording & Sound Design for Media	1
MUS-101	Music Fundamentals	3
MUS-107	Introduction to Audio Recording I	3
MUS-108	Introduction to Audio Recording II	3
MUS-109	Introduction to Audio Recording III	3
MUS-148	Live Sound Engineering	3
MUS-247	Sound for Film/Video Production	
or DMC-247	Sound for Film/Video Production	3
MUS-147	Music, Sound, and Moviemaking	1
MUS-171	Sound Design	2

MUSIC & SOUND FOR MEDIA

COURSE		CREDITS
DMC-242	Field Recording	1
MUS-101	Music Fundamentals	3
MUS-107	Introduction to Audio Recording I	3
MUS-141	Introduction to the Music Business	3
MUS-142	Introduction to Electronic Music I	3
MUS-143	Introduction to Electronic Music II	3
MUS-145	Introduction to Digital Sound, Video & Animation	3
MUS-147	Music, Sound, and Moviemaking	1
MUS-170	Scoring for Media	2

DMC PROGRAM ELECTIVES

Additional selected electives must be from different subject areas, from the following list of prefixes: ANT, ART, BA, COMM, CS, DMC, EC, ENG, GEO, HST, J, MUS, PS, PSY, SOC, SSC, TA, WR, or WS.

Entry Level Multimedia Journalist

Career Pathway Certificate

PROGRAM CODE: CC.ELVLMMJRNST

The Entry Level Multimedia Journalist certificate prepares students for entry level positions in the field of multimedia and journalism. Students attain knowledge and learn skills to seek careers in creative and support professions related to multimedia and broadcast journalism, such as visual and audio editing, multimedia 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 multimedia 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 slide show, 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 Andy Mingo, 503-594-3264 or *andym@clackamas.edu*

ENTRY LEVEL MULTIMEDIA JOURNALIST CAREER PATHWAY CERTIFICATE

FALL TERM		**CREDITS**
DMC-100	Introduction to Media Arts	3
DMC-104	Digital Video Editing	4
J-216	Writing for Media	
or J-230	Multimedia Reporting	4
J-220	Introduction to Broadcast Journalism	4
WINTER TERM		
COMM-100	Speech Communications	
or PSY-101	Human Relations	3
J-215	College Newspaper Lab: Writing & Photography	3
WR-121	English Composition	4
SPRING TERM		
BA-146	Entertainment Law & New Media	3
DMC-190	Digital Media Communications Portfolio Project I	1
J-211	Mass Media & Society	4
J-221	Broadcast Journalism	
or J-226	Introduction to College Newspaper: Design & Production	4
Credits required for certificate		*37*

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 multimedia video production. Students attain knowledge and learn skills to seek careers in creative and support professions related to multimedia video production, such as visual and audio editing, multimedia production, post production, sound design, duplication production assistant, camera operators, multimedia artists and animators, titling, and motion graphics.

PROGRAM OUTCOMES

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

- create and produce a multimedia production by the following process of 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 multimedia video production,
- display skills and knowledge of software used in the multimedia 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 multimedia artists and animators.

For information contact Andy Mingo, 503-594-3264 or *andym@clackamas.edu*

VIDEO PRODUCTION TECHNICIAN CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
ART-106	Animation & Motion Graphics	
or DMC-106	Animation & Motion Graphics	3
COMM-100	Basic Speech Communications	
or PSY-101	Human Relations	3
DMC-100	Introduction to Media Arts	3
DMC-104	Digital Video Editing	4
WINTER TERM		
DMC-264	Digital Filmmaking	4
DMC-247	Music, Sound & Moviemaking	
or MUS-247	Music, Sound & Moviemaking	3
WR-121	English Composition	4
SPRING TERM		
BA-146	Entertainment Law & New Media	3
DMC-190	Digital Media Communications Portfolio Project I	1
DMC-242	Field Recording & Sound Design for Media	1
WR-262	Introduction to Screenwriting	4
Credits required for certificate		*33*

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.

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 education and family support settings: in-charge teachers in private preschools/kindergartens or teaching assistants (paraeducators) in public school settings (PK-4th Grade and Head Start). 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	3-4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4

continued

Early Childhood Education & Family Studies continued…

FALL TERM		
ECE-150	Introduction to Early Childhood Education	3
ECE-235	Nutrition, Music & Movement	3
HDF-225	Prenatal, Infant & Toddler Development	3
HDF-260	Understanding Child Abuse & Neglect	3
— —	PE/Health/Safety/First Aid requirement (see page 82)	2-3
WINTER TERM		
ECE-121	Observation & Guidance I in ECE Settings	4
ECE-154	Language & Literacy Development	3
ECE-240	Environments & Curriculum Planning	3
HDF-247	Preschool Child Development	3
SPRING TERM		
ECE-179	The Professional in Early Childhood Education & Family Studies	2
ECE-239	Helping Children & Families Cope With Stress	3
ECE-280	Early Childhood Education/CWE	3
ED-258	Multicultural Education	3
HDF-140 or SOC-210	Contemporary American Families Marriage, Family & Intimate Relations	3-4
Credits required for certificate		*47-51*

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-221	Observation & Guidance II in ECE Settings	4
ECE-241	Environments & Curriculum Planning: Infants and Toddlers	3
ED-100	Introduction to Education	3
— —	Early Childhood Education program electives	4
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	4
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		*90-94*

EARLY CHILDHOOD EDUCATION & FAMILY STUDIES PROGRAM ELECTIVES

COURSE		CREDITS
BA-101	Introduction to Business	4
COMM-100*	Basic Speech Communication	3
COMM-105	Listening	4
ECE-135	Self-Esteem in the ECE Classroom	1
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
ECE-145	Understanding Superhero Play in the Classroom	1
ED-150	Creative Activities for Children	3
ED-229	Learning & Development	3
ED-235	Educational Technology	3
HS-154	Community Resources	3
HST-138	History of Love, Marriage and the Family	4
PSY-101	Human Relations	3
PSY-205	Psychology as a Social Science	4
PSY-215	Introduction to Developmental Psychology	4
PSY-221	Introduction to Counseling	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.

PROGRAM OUTCOMES

Electronics Engineering Technology AAS Degree

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

- collaborate safely and professionally in an electronic technology-focused workplace,
- use and comprehend standard electronics terminology in communication,
- identify and isolate technology problems,
- identify electronic components including resistors, capacitors, inductors, diodes, transistors, amplifiers and digital logic gates;
- read specifications, symbols, schematics, ladder diagrams and assembly drawings;
- recognize common circuit arrangement like bridges, Darlington pairs, differential pairs;
- comprehend AC, DC, amps, volts, ohms, impedance, watts, frequency, apparent and reactive power;
- operate and interpret oscilloscopes, multimeters, signal generators, power supplies;
- assemble, disassemble, adjust and verify electronic equipment performance;
- use test procedures and test equipment to service and maintain equipment.

PROGRAM OUTCOMES

Electronics Engineering Technology Certificate Degree

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

- safely and professionally collaborate in an electronic technology-focused workplace,
- use and comprehend standard electronics terminology in communication,
- identify electronic components including resistors, capacitors, diodes, transistors, amplifiers, and digital logic gates;
- read specifications, symbols and schematics;
- recognize common circuit arrangements like bridges, Darlington pairs, differential pairs;
- comprehend AC, DC, amps, volts, ohms, impedance, watts, frequency, apparent and reactive power;
- operate and interpret oscilloscopes, multimeters, signal generators, power supplies;
- assemble and disassemble 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 Manufacturing Department, 503-594-3318.

ELECTRONICS ENGINEERING TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
EET-112	Electronic Test Equipment & Soldering	3
EET-137	Electrical Fundamentals I	4
MFG-109	Computer Literacy for Technicians	3
MTH-095	Algebra III	4
SM-150	Semiconductor Processing I	2
WR-101*	Communication Skills: Occupational Writing	3
SECOND TERM		
EET-139	Principles of Troubleshooting I	2
EET-141	Electrical Fundamentals II	4
EET-157	Digital Logic I	3
MTH-111	College Algebra	5
— —	Human Relations requirement (see page 82)	3
THIRD TERM		
EET-127	Semiconductor Circuits I	4
EET-142	Electrical Fundamentals III	4
EET-257	Digital Logic II	4
MTH-112	Trigonometry/Pre-Calculus	5
SM-280	Electronics & Microelectronics/CWE	2
Credits required for certificate		*55*

ELECTRONICS ENGINEERING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

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

FOURTH TERM		CREDITS
EET-215	Electromechanical Systems I	2
EET-227	Semiconductor Circuits II	3
EET-239	Principles of Troubleshooting II	2
MFG-107	Industrial Safety & First Aid	3
PH-201**	General Physics	5
FIFTH TERM		
EET-250	Linear Circuits	3
EET-252	Control Systems	3
EET-254	Introduction to Microcontrollers	4
MFG-209	Programming & Automation for Manufacturing	3
PH-202**	General Physics	5
SIXTH TERM		
EET-230	Laser and Fiber Optics	3
MFG-133	Programmable Logic Controllers	3
PH-203**	General Physics	5
SM-280	Electronics & Microelectronics/CWE	2
— —	Electronics Engineering Technology program electives	3
Credits required for degree		*104*

ELECTRONICS ENGINEERING TECHNOLOGY PROGRAM ELECTIVES:

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

*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.

**The General Physics with Calculus series PH-211/212/213 may be substituted.

ELECTRONICS ENGINEERING TECHNOLOGY

(Oregon Tech transfer courses)

The CCC Manufacturing 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 Manufacturing Department, 503-594-3318.

Emergency Management

Associated of Applied Science Degree

PROGRAM CODE: AAS.EMERGMANAGE

Emergency Management course work prepares a student to make decisions, problem solve, communicate effectively and coordinate all sources necessary for preparedness, mitigation, response and recovery for any possible emergency or disaster. A program description and list of approved courses can be found on the Criminal Justice/Emergency Management website:
www.clackamas.edu/HumanServices/EmergencyManagement/

For information call 503-594-3207.

PROGRAM OUTCOMES

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

- identify the components of the National Incident Management System (NIMS),
- describe the duties and functions of each of the major roles within the Incident Command System (ICS),
- discuss the role of non-professional responders in emergency management,
- chart the interaction between federal, state, local and tribal agencies when managing an emergency,
- list the uses of emergency management exercises for improving emergency preparedness,
- demonstrate skills necessary to function as an Emergency Management professional.

CAREERS

Career opportunities include local emergency manager, FEMA worker, public safety manager, Homeland Defense Agency worker and risk assessment manager.

For information contact Jeff Ennenga, 503-594-3539 or *jeff.ennenga@clackamas.edu*

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, EMS & Trauma Systems Section (OHA/EMS). National certification is available through the National Registry of EMTs (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.

PROGRAM OUTCOMES

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

- demonstrate the ability to safely provide immediate care to the critically ill patients or injured people in the pre-hospital setting,
- demonstrate the ability to be an effective member of a 911 emergency medical response team,
- demonstrate the ability to safely transport sick and injured person to emergency medical facilities,
- effectively evaluate each situation and administer basic and advance life support care, including patient extrication;
- demonstrate the ability to properly document patient information, treatment plans and patient progress in the pre-hospital setting;
- demonstrate the ability to apply the laws and rules relevant to emergency responders,
- become an Oregon licensed and National Certified EMT, preparing for entry-level employment within Oregon.

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 continuing education opportunities for healthcare providers see Healthcare Professional Development (HPD) in the course description section on page 210.

For information contact the EMT program director at 503-594-0696 or department at 503-594-0650.

EMERGENCY MEDICAL TECHNOLOGY CERTIFICATE

FALL TERM		CREDITS
BI-231	Human Anatomy & Physiology I	4
COMM-111	Public Speaking	4
EMT-101*	EMT Part I	5
EMT-105	Introduction to Emergency Medical Services	3
MTH-065	Algebra II	4
WINTER TERM		
BI-232	Human Anatomy & Physiology II	4
EMT-102	EMT Part II	5
EMT-109	Emergency Response Communication/ Documentation	2
MA-110	Medical Terminology	3
WR-121	English Composition	4
SPRING TERM		
BI-233	Human Anatomy & Physiology III	4
CJA-203	Crisis Intervention	3
CS-120	Survey of Computing	4
EMT-107	EMT Rescue	3
EMT-108	Emergency Response Patient Transportation	2
SOC-205	Social Stratification & Social System	4
Credits required for certificate		*58*

*Instructor consent required.

Current Healthcare Provider level CPR (AHA or ASHI) are 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 can not 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/*

Fire Science (Wildland)

Certificate

PROGRAM CODE: CC.FSWILDLAND

The Fire Science (Wildland) 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.

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/firescience/*

continued

Fire Science (Wildland) continued…

FIRE SCIENCE (WILDLAND) 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)	3
FRP-243	Survivor I: Map, Compass, GPS	2
HD-120	New Student College Success	1
WR-121	English Composition	
or WR-101	Communication Skills: Occupational Writing	3-4
— —	Fire Science (Wildland) program electives	2-5
SECOND TERM		
ESH-100	Environmental Regulations	3
FRP-211	Portable Pumps & Water Use (S-211)	1
FRP-216	Driving for the Fire Service (S-216)	2
FRP-244	Survivor II: Wilderness	2
FRP-246	Survivor IV: Wilderness First Aid	2
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
— —	Human Relations requirement (see page 82) (Recommended: PSY-101)	3
THIRD TERM		
FRP-110	Basic Wildland Fire Investigation (FI-110)	1
FRP-180	Wildland Firefighting/CWE	6
FRP-201	Advanced Forest Management	3
FRP-212	Wildfire Power Saws (S-212)	2
FRP-245	Survivor III: Weather of the NW	2
FRP-270	Basic Air Operations (S-270)	1
Credits required for certificate		*46-51*

FIRE SCIENCE (WILDLAND) PROGRAM ELECTIVES

COURSE		CREDITS
BI-103	General Biology; Plants & the Ecosystem	4
EMT-101	EMT Part I	5
EMT-102	EMT Part II	5
EMT-107	EMT Rescue	3
FRP-131	Advanced Firefighter Training (S-131)	1
FRP-200	Basic Incident Command (I-200)	1
FRP-205	Forest Management Assessments & Inventories	3
FRP-220	Initial Attack Incident Commander (S-200)	1
FRP-230	Crew Boss, Single Resource (S-230)	2
FRP-231	Engine Boss (S-231)	1
FRP-247	Survivor V: Dangerous Animals	2
FRP-248	Survivor VI: Introduction to Search and Rescue	2
FRP-249	Leadership for Firefighters (L-280)	2
FRP-259	Task Force/Strike Team Leader (S-330)	2
FRP-290	Intermediate Fire Behavior (S-290)	3
FRP-294	Intermediate Incident Command System (I-300)	2
FRP-295	Advanced ICS: ICS for Command and General Staff & Complex Incidents (I-400)	2
FRP-296	Introduction to Wildland Fire Behavior Calculations (S-390)	3
GIS-201	Introduction to Geographic Information Systems	3
GIS-232	Data Collection & Application	3
GIS-281	ArcGIS I	3
GIS-282	ArcGIS II	3

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 Firefighter 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/firescience/*

WILDLAND FIREFIGHTER 1 CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
ESH-100	Environmental Regulations	3
FRP-130	Introduction to Wildland Firefighting (S-130/S-190/L-180)	3
FRP-131	Advanced Firefighter Training (S-131)	1
FRP-211	Portable Pumps & Water Use (S-211)	1
FRP-216	Driving for the Fire Service (S-216)	2
FRP-243	Survivor I: Map, Compass, GPS	2
Credits required for certificate		*12*

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/firescience/*

WILDLAND FIRE FORESTRY CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BI-103	General Biology; Plants & Ecosystems	4
BI-103L	General Biology; Plants & Ecosystems Lab	0
FRP-101	Basic Forest Management	3
FRP-102	Basic Forest Management Lab	1
FRP-201	Advanced Forest Management	3
FRP-205	Forest Management Assessments & Inventories	3
Credits required for certificate		*14*

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.

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.

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 OF COMPLETION

FIRST TERM		CREDITS
HE-163	Body and Drugs I: Introduction to Abuse & Addiction	3
HE-202	Introduction to Fitness Technology Careers	1
MTH-050 or MTH-065	Technical Mathematics I or Algebra II	3-4
PE-240	Strength & Conditioning Theory and Techniques	3
— —	Fitness Technology program elective	3
SECOND TERM		
COMM-126 or COMM-218 or COMM-219 or COMM-227	Communication Between the Sexes or Interpersonal Communication or Small Group Communication or Non-Verbal Communication	4
HE-252	First Aid/CPR/AED	3
HPE-295	Health and Fitness for Life	3
PE-280	Physical Education/CWE	3
— —	Fitness Technology program elective	3
THIRD TERM		
HE-223	Sports Nutrition	3
HE-250	Personal Health	3
PE-280	Physical Education/CWE	3
WR-101 or WR-121	Communication Skills: Occupational Writing or English Composition	3-4
— —	Fitness Technology program elective	4
Credits required for certificate		*45 -47*

FITNESS TECHNOLOGY PROGRAM ELECTIVES

COURSE		CREDITS
CWE-181	Cooperative Work Experience Preparation	3
HE-164	Body and Drugs II: Alcohol	3
HE-201	Personal Training	3
HE-207	Introduction to Plant Based Living	3
HE-223	Sports Nutrition	3
HE-249	Mental Health	3
HE-255	Body & Alcohol	3
PE-185	Physical Education Activity Course	1
PE-260	Care & Prevention of Athletic Injuries	2
PE-270	Sport & Exercise Psychology	3
PE-294A	Philosophy of Coaching	2

Geographic Information Systems (GIS) Technology

Certificate

PROGRAM CODE: CC.GISTECHNOLOGY

The Geographic Information Systems (GIS) Technology Certificate offers instruction in the fields of geography, data analysis, cartography, computer-aided drafting (CAD), global positioning systems (GPS), database theory and mathematics. The program also includes instruction in research skills, technical mathematics, computer programming, human relations skills and other field competencies.

PROGRAM OUTCOMES

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

- interpret accurately technical drawings to determine product manufacturing specifications,
- understand clearly GIS concepts and techniques,
- understand and capably use many aspects of the ArcGIS software,
- create high quality digital maps,
- design, plan and execute GIS projects;
- create and design advanced Geodatabases for use in GIS,
- use capably geoprocessing tools to analyze data in a GIS environment,
- write scripts using the Python programming language,
- use advanced editing techniques to capture GIS data,
- analyze and interpret remote sensing data, including LIDAR,
- use a mapping grade Global Positioning System (GPS) to collect data for a GIS project,
- transform data form different formats to a GIS,
- create websites using HTML,
- create CAD data and transform it to a GIS.

CAREERS

Career opportunities may include: GIS technician, GIS analyst, mapping technician and survey and remote sensing technician.

For information contact the Manufacturing Department, 503-594-3318.

GEOGRAPHIC INFORMATION SYSTEMS (GIS) TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
GEO-100 or GEO-110	Introduction to Physical Geography Cultural & Human Geography	4
GIS-201	Introduction to Geographic Information System	3
GIS-236	Visual Basic Programming for GIS	1
MFG-109	Computer Literacy for Technicians	3
MTH-050	Technical Mathematics I	3
WR-121	English Composition	4

SECOND TERM		
CDT-103	Computer-Aided Drafting I	3
GIS-237	Advanced Visual Basic Programming for GIS	1
GIS-281	ArcGIS I	3
GIS-286	Remote Sensing	3
MTH-080	Technical Mathematics II	3
— —	Technical elective	3

THIRD TERM		
CDT-224	Professional Web Design	1
GIS-232	Data Collection & Application	3
GIS-280	GIS/CWE	4
GIS-282	ArcGIS II	3
— —	Human Relations requirement (see page 82)	3
Credits required for certificate		*48*

TECHNICAL ELECTIVES

Any course with a GIS or CDT prefix.

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 Associate of Applied Science degree in Human Services.

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 *yvonnes@clackamas.edu*

GERONTOLOGY CERTIFICATE

FALL TERM		CREDITS
GRN-180	Careers In Gerontology	1
GRN-181	Issues in Aging	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	
or HE-255	Body and Alcohol	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Gerontology program elective	5-7
WINTER TERM		
GRN-182	Aging & the Body	3
GRN-184	Aging & the Individual	3
HS-154	Community Resources	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
— —	Gerontology program elective	3-4
SPRING TERM		
GRN-183	Death & Dying	3
GRN-280	Gerontology/CWE	3
HS-156	Introductory Interviewing Skills	3
HS-170	Preparation for Field Experience in Human Services	3
— —	Gerontology program elective	3-4
Credits required for certificate		*45-51*

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-290	Special Topics in Gerontology	1
HE-164	Body and Drugs II: Alcohol	3
HS-100	Introduction to Human Services	3
HS-103	Ethics for Human Services Workers	2
HS-130	Introduction to Hospice	3
HS-165	Activity Director for Long Term Care	3
HS-211	HIV, TB & Infectious Diseases	1
HS-216	Group Counseling Skills	3
HS-256	Advanced Interviewing Skills with Theory	3
HS-260	Victim Advocacy and Assistance	4
NUR-100	Nursing Assistant I	7
NUR-100C	Nursing Assistant I Lab	0
NUR-101	Certified Nursing Assistant 2 Acute Care	5
NUR-101C	Certified Nursing Assistant 2 Acute Care Clinical	0
PSY-219	Abnormal Psychology	4
PSY-221	Introduction to Counseling	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 Nurses (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 (Health Promotion) and then the assumption is that as the curricula addresses the life span 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 Management 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 *yvonnes@clackamas.edu*

GERONTOLOGY FOR HEALTH CARE POFESSIONALS CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
GRN-181	Issues in Aging	3
GRN-182	Aging & the Body	3
GRN-183	Death & Dying	3
GRN-184	Aging & the Individual	3
— —	Gerontology for Health Care Professionals program electives	3
Credits required for certificate		*15*

continued

Gerontology for Health Care Professionals continued…

GERONTOLOGY FOR HEALTH CARE PROFESSIONALS PROGRAM ELECTIVES

COURSE		CREDITS
GRN-290	Special Topics in Gerontology	1
HE-151	Body & Drugs I	3
HE-255	Body & Alcohol	3
HS-154	Community Resources	3
HS-156	Interviewing Theory & Techniques	3
HS-165	Activity Director	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 *yvonnes@clackamas.edu*

NURSING ASSISTANT–GERONTOLOGY SPECIALIST CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
GRN-181	Issues in Aging	3
GRN-182	Aging & the Body	3
GRN-183	Death & Dying	3
GRN-184	Aging & the Individual	3
NUR-100	Nursing Assistant I	7
NUR-100C	Nursing Assistant I Clinical	0
Credits required for certificate		*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 appropriate for the 21st century.

Horticulture is a hands-on, broad-based curriculum where all students participate in a laboratory-style practicum class which develops a full season's experience in growing and caring for plants. Learning activities involve students in the day-to-day operation of a wide range of power and hand tools used in the trade, including: landscape mowers, rototillers, computers, tractors, skid steer loader, pruning tools and greenhouse equipment. Students cultivate plants in CCC's extensive landscape and greenhouse facilities, including: the Water-Efficient Demonstration Garden, Annual Display Garden, Herb Garden, Perennial Garden, Landscape Industry Certified Technician test site, Farm site and several greenhouses.

Students may begin this program any term. 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 is not required, but will allow for completion in the one or two year period.

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;
- pass the ODA Pesticide Laws & Safety exam, and an applicator exam.

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,
- effectively communicate with co-workers and customers through speaking, writing, and computer technology;
- pass the ODA Pesticide Laws & Safety exam.

Students are eligible to sit for the Oregon Certified Nursery Professional Exam. 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.

For information contact the Horticulture Department, 503-594-3292 or *lorettam@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	3
HOR-227	Plant Identification/Winter	3
HOR-228	Plant Identification/Spring	3

Note: Many of the horticulture courses will also transfer as Lower Division Collegiate (LDC) credits.

HORTICULTURE CERTIFICATE

FALL TERM		CREDITS
CS-091	Fundamental Computer Skills II	2
HOR-111	Horticulture Practicum/Fall	2
HOR-115	Horticulture Safety	1
HOR-122	Greenhouse Crops-Potted Plants	
or HOR-224	Landscape Installation	3
HOR-226	Plant Identification/Fall	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level math)	3-5
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	3
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 Crops-Bedding Plants	
or HOR-145	Turf Installation & Maintenance	2-3
HOR-143	Horticulture Practicum/Spring	2
HOR-228	Plant Identification/Spring	3
SUMMER TERM		
HOR-280	Horticulture/CWE	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
Credits required for certificate		*49-54*

HORTICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
CS-091	Fundamental Computer Skills II	2
HOR-111	Horticulture Practicum/Fall	2
HOR-115	Horticulture Safety	1
HOR-122	Greenhouse Crops-Potted Plants	
or HOR-224	Landscape Installation	3
HOR-226	Plant Identification/Fall	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level math)	3-5
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	3
SPRING TERM		
HOR-112	Horticulture Career Exploration	2
HOR-120	Pesticide Laws & Safety	1
HOR-140	Soils	3
HOR-142	Greenhouse Crops-Bedding Plants	
or HOR-145	Turf Installation & Maintenance	2-3
HOR-143	Horticulture Practicum/Spring	2
HOR-228	Plant Identification/Spring	3
SUMMER TERM		
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE & HOR-282 Horticulture/CWE	6

continued

Horticulture continued…

HORTICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
HOR-223	Applied Plant Science	4
HOR-235	Weed Identification	
or HOR-236	Insect Identification	2
SPN-101	First Year Spanish	4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Horticulture program electives	3
WINTER TERM		
BA-119	Project Management Practices	2
BA-250	Small Business Management	3
HOR-230	Equipment Operation & Maintenance	2
HOR-231	Irrigation & Drainage Design	3
HOR-237	Disease Identification	2
— —	Horticulture program electives	3
SPRING TERM		
BA-285	Human Relations in Business	
or COMM-100	Basic Speech Communication	3-4
HE-252**	First Aid/CPR/AED	3
HOR-240	Irrigation & Drainage Practices	3
— —	Horticulture program electives	8
Credits required for degree		*94-99*

HORTICULTURE PROGRAM ELECTIVES

COURSE		CREDITS
BA-223	Principles of Marketing	4
HOR-113	Organic Farming Practicum/Fall	3
HOR-122	Greenhouse Crops—Potted Plants	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-134	Herb Growing & Gardening	1
HOR-135	Propagation of Edible Plants	3
HOR-136	Organic Farming Practicum/Winter	3
HOR-141	Organic Farming Practicum/Spring	4
HOR-142	Greenhouse Crops—Bedding Plants	3
or HOR-145	Turf Installation & Maintenance	2
HOR-144	Basic Pruning	1
HOR-146	Fruit & Berry Growing	3
HOR-148	Farm Equipment	3
HOR-149	Aquaponics	1
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-216	Integrated Pest Management	3
HOR-220	Plant Propagation/Fall	3
HOR-225	Arboriculture I	3
HOR-229*	Introduction to Landscape Design	3
HOR-231	Irrigation & Drainage Design	3
HOR-232*	Commercial Floral Design	3
HOR-235	Weed Identification	
or HOR-236	Insect Identification	2
HOR-239	Tree Climber Training	1
HOR-240	Irrigation & Drainage Practices	3
HOR-241*	Nursery Management	3
HOR-244*	Environmental Landscape Design	3
HOR-246	Organic Farming & Gardening	2
HOR-250	Western Herbs	2
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

*Offered alternate years
**Course may be waived with current CPR certification

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 both the Horticulture and Landscape Management AAS degree programs.

Students in this program also have the opportunity to take Backflow Assembly Operations & Testing (WET-109), which prepares them to become certified as a Backflow Assembly Tester.

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 Horticulture Department, 503-594-3292 or *lorettam@clackamas.edu*

IRRIGATION TECHNICIAN CAREER PATHWAY CERTIFICATE

WINTER TERM		CREDITS
HOR-231	Irrigation & Drainage Design	3
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE & HOR-282 Horticulture/CWE	6
SPRING TERM		
HOR-140	Soils	3
HOR-240	Irrigation & Drainage Practices	3
Credits required for certificate		*15*

Plant Health Management

Career Pathway Certificate

PROGRAM CODE: CC.PLANTHLTHMGMT

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 both the Horticulture and Landscape Management AAS programs.

PROGRAM OUTCOMES

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

- pass the ODA Pesticide Laws & Safety exam, and a Commercial Pesticide Applicator exam;
- 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, or production agriculture.

For information contact Horticulture Department, 503-594-3292 or *lorettam@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	Pesticides Laws & Safety	1
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE & HOR-282 Horticulture/CWE	6
Credits required for certificate		*16*

Human Services Generalist

Certificate
Associate of Applied Science Degree

PROGRAM CODES: AAS.HUMANSERVGEN, CC.HUMANSERVGEN

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.

PROGRAM OUTCOMES

Human Services Generalist AAS Degree

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

- demonstrate appropriate interviewing skills when working with human service clients,
- complete human service assessments that include client strengths and challenges,
- outline key resources in the community and the network of service delivery,
- apply knowledge about the development and function of individuals and families in a practice setting,
- 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.

PROGRAM OUTCOMES

Human Services Generalist Certificate Degree

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

- outline key resources in the community and the network of service delivery,
- apply knowledge about the development and function of individuals and families in a practice setting,
- 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 *yvonnes@clackamas.edu*

continued

Human Services Generalist continued…

HUMAN SERVICES GENERALIST CERTIFICATE

FALL TERM		CREDITS
HDF-260	Understanding Child Abuse & Neglect	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HS-100	Introduction to Human Services	3
WR-101	Occupational Writing	
or WR-121	English Composition	3-4
— —	Human Services Generalist program electives	3
WINTER TERM		
HE-255	Body & Alcohol	3
HS-154	Community Resources	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
— —	Human Services Generalist program electives	6
SPRING TERM		
HDF-140	Contemporary American Families	
or SOC-210	Marriage, Family & Intimate Relations	3-4
HS-156	Introductory Interviewing Skills	3
HS-170	Introduction to Field Experiences in Human Services	3
HS-280	Human Services Generalist: CWE/Practicum	3
— —	Human Services Generalist program electives	3
Credits required for certificate		*45-48*

HUMAN SERVICES GENERALIST ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
HDF-260	Understanding Child Abuse & Neglect	3
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HS-100	Introduction to Human Services	3
WR-101	Occupational Writing	
or WR-121	English Composition	3-4
— —	Human Services Generalist program electives	3
WINTER TERM		
HE-164	Body & Drugs II: Alcohol	3
HS-154	Community Resources	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
— —	Human Services Generalist program electives	6
SPRING TERM		
HDF-140	Contemporary American Families	
or SOC-210	Marriage, Family & Intimate Relations	3-4
HS-156	Introductory Interviewing Skills	3
HS-170	Introduction to Field Experiences in Human Services	3
— —	Human Services Generalist program electives	6

HUMAN SERVICES GENERALIST ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
HS-256	Advanced Interviewing Skills with Theory	3
HS-260	Victim Advocacy & Assistance	4
HS-280	Human Services Generalist: 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	3-4
SPRING TERM		
HS-216	Group Counseling Skills	3
HS-282	Human Services Generalist III: CWE/Practicum	4
— —	Human Services Generalist program electives	8
Credits required for degree		*90-93*

HUMAN SERVICES GENERALIST PROGRAM ELECTIVES

Students take 30 credits from any of the following certificate programs, as electives in the Human Services Generalist program:

Any course numbered 100 or above in the following prefixes as long as the course is not fulfilling another requirement in this degree:

CJA, COMM, ED, ECE, GRN, HD, HDF, HS, MA, PSY, SOC, WS, ASL, GER, FR, SPN 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

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.accbo.com*

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 heath.

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 *yvonnes@clackamas.edu*

ALCOHOL & DRUG COUNSELOR CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
HE-163	Body & Drugs I: Introduction to Abuse & Addiction	3
HE-255	Body and Alcohol	3
HS-103	Ethics for Human Service Workers	2
HS-156	Interviewing Theory and Techniques	3
HS-211	HIV, TB, and Infectious Diseases	1
HS-216	Group Counseling Skills	3
Credits required for certificate		*15*

Landscape Management

Associate of Applied Science Degree

PROGRAM CODE: AAS.LANDSCAPEMGMT

The Landscape Management degree will prepare 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, low water 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), which speaks to its credibility in the industry. Students have the opportunity to compete on the team that attends NALP's National Collegiate Landscape Competition each year. Also, NALP's certified technician testing site for Oregon is located on campus, and is used for instructional purposes.

Landscape Management graduates may be eligible to take NALP's Landscape Industry Certified Technician-Exterior Ornamental Maintenance test free of charge.

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.

Students may begin this program any term. Following the course offerings in the order listed is not required, but will allow for completion in a two year period.

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;
- pass the ODA Pesticide Laws & Safety exam, and an applicator exam;
- pass NALP's Landscape Industry Certified Technician-Exterior test for Ornamental Maintenance.

CAREERS

As a graduate of our Landscape program, you will be prepared to work in a supervisory or skilled landscape technician position for a landscape design/build company, estate garden, parks department, tree care company, golf course or as a self-employed installation/maintenance contractor.

For information contact Horticulture Department, 503-594-3292 or *lorettam@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	3
HOR-227	Plant Identification/Winter	3
HOR-228	Plant Identification/Spring	3

Note: Many of the horticulture courses will also transfer as Lower Division Collegiate (LDC) credits.

continued

Landscape Management continued…

LANDSCAPE MANAGEMENT
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
HOR-111	Horticulture Practicum/Fall	2
HOR-115	Horticulture Safety	1
HOR-123	Landscape Maintenance	3
HOR-236	Insect Identification	2
HOR-226	Plant Identification/Fall	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II (or higher level of math)	3-5
WINTER TERM		
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	3
HOR-229*	Introduction to Landscape Design	
or HOR-244*	Environmental Landscape Design	3
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	3
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-223	Applied Plant Science	4
HOR-224	Landscape Installation	3
HOR-235	Weed Identification	2
SPN-101	First Year Spanish	4
— —	Landscape Management program electives	3
WINTER TERM		
BA-119	Project Management Practices	2
BA-250	Small Business Management	3
HOR-230	Equipment Operation & Maintenance	2
HOR-231	Irrigation & Drainage 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		
HE-252**	First Aid/CPR/AED	3
Choose two from the following:		
HOR-126*	Landscape Water Features	
HOR-127*	Landscape Lighting	
HOR-128*	Landscape Stones & Pavers	
HOR-129*	Landscape Decks & Fences	2
HOR-145	Turf Installation & Maintenance	2
HOR-215	Herbaceous Perennials	3
HOR-240	Irrigation & Drainage Practices	3
Credits required for degree		*94-98*

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-134	Herb Growing & Gardening	1
HOR-142	Greenhouse Crops-Bedding Plants	3
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 & Gardening	2
HOR-260	Arboriculture II	3
HOR-261	Tree Diagnostics	2
WET-109	Backflow Assembly Operation & Testing	3

*Offered alternate years

**Course may be waived with current CPR certification

Landscape Practices

Certificate

PROGRAM CODE: CC.LANDSCAPEPRAC

The Landscape Practices certificate will prepare 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, low water 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 National Association of Landscape Professionals (NALP), which speaks to its credibility in the industry. Students have the opportunity to compete on the team that attends NALP's National Collegiate Landscape Competition each year. Also, NALP's certified technician testing site for Oregon is located on campus, and is used for instructional purposes.

Students may begin this program any term. Following the course offerings in the order listed is not required, but will allow for completion in a one year period.

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,
- pass the ODA Pesticide Laws & Safety exam.

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 Horticulture Department, 503-594-3292 or *lorettam@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	3
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	
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
Choose one from the following:		
HOR-126*	Landscape Water Features	
HOR-127*	Landscape Lighting	
HOR-128*	Landscape Stones & Pavers	
HOR-129*	Landscape Decks & Fences	1
HOR-140	Soils	3
HOR-145	Turf Installation & Maintenance	2
HOR-228	Plant Identification/Spring	3
HOR-240	Irrigation & Drainage Practices	3
SUMMER TERM		
HOR-280	Horticulture/CWE	3
Credits required for certificate		*43*

* Offered alternate years

Manufacturing Technology

Professional Upgrade
Certificate
Associate of Applied Science Degree

PROGRAM CODES: AAS.MANUFTECH, CC.MANUFTECH

Course work in manufacturing 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.

PROGRAM OUTCOMES

Manufacturing Technology AAS Degree

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

- accurately interpret technical drawings to determine product manufacturing specifications,
- work safely in an industrial environment around machinery, power tools and chemicals;
- operate manual machine tools to produce products to required specifications,
- operate CNC machine tools including: program try-out, tooling/work-piece setup and adjustment, communicate effectively with G&M code language to perform everyday machining operations on three-axis milling machines and two-axis lathes,
- utilize computer software to create CAD models and CAM generated programs for machining processes,
- apply technical mathematics to solve manufacturing problems including: manual machining positioning, dimensional inspection, and CNC programming,
- apply knowledge of materials, physics and mathematics to effectively machine industrial materials;
- plan manufacturing operations in a logical and efficient manner to produce products on both manual and CNC machine tools,
- work and communicate effectively in team environment to achieve high quality value stream,
- work independently to solve common problems in manufacturing processes.

continued

Manufacturing Technology continued…

PROGRAM OUTCOMES

Manufacturing Technology Certificate Degree

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

- accurately interpret technical drawings to determine product manufacturing specifications,
- work safely in an industrial environment around machinery, power tools and chemicals;
- apply technical mathematics to solve manufacturing problems including: manual machining positioning and dimensional inspection,
- plan manufacturing operations in a logical and efficient manner to produce products on manual machine tools,
- work independently to solve common problems in manufacturing processes.

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 work force, 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 Manufacturing Department, 503-594-3318.

MANUFACTURING ENGINEERING TECHNOLOGY

(Oregon Tech transfer courses)

The Manufacturing 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 Manufacturing Department, 503-594-3318.

MANUFACTURING 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	3
SECOND TERM		
MFG-105	Dimensional Inspection	2
MFG-109	Computer Literacy for Technicians	
or MFG-209	Programming and Automation for Manufacturing	3
MFG-112	Machine Tool Fundamentals II	9
MTH-080	Technical Mathematics II	3
THIRD TERM		
MFG-106	Applied Geometric Dimensioning & Tolerancing for Manufacturing	3
MFG-201	CNC I: Set-up & Operation	4
MFG-280	Manufacturing Technology/CWE	2
WR-101*	Communication Skills: Occupational Writing	3
— —	Human Relations requirement (see page 82)	3
Credits required for certificate		*49*

MANUFACTURING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

MANUFACTURING 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
— —	Manufacturing 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
Credits required for degree		*93*

MANUFACTURING 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	4
CDT-108A	Introduction to Solid Modeling	3
CDT-223	Inventor Fundamentals	3
CDT-225	Advanced SolidWorks	3
MET-170	Introduction to Manufacturing Process	3
MFG-103	Machining for the Fabrication & Maintenance Trades	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.

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 Manufacturing Technology Certificate or two-year Manufacturing 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 Manufacturing 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 & Operation	4
MTH-050	Technical Mathematics I	3
— —	CNC Machining Technician program elective	2-4
Credits required for certificate		*23-25*

CNC MACHINING TECHNICIAN PROGRAM ELECTIVES

COURSE		CREDITS
MFG-105	Dimensional Inspection	2
MFG-106	Applied Geometric Dimensioning & Tolerancing for Manufacturing	2
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

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 Manufacturing Department, 503-594-3318.

MASTERCAM CERTIFICATE

COURSE		CREDITS
MFG-271	Mastercam Mill I	4
MFG-272	Mastercam Mill II	4
MFG-273	Mastercam Mill III	4
Credits required for certificate		*12*

Medical Assistant

Certificate

PROGRAM CODE: CC.MEDASST

Medical assistants function as integral members of the health-care delivery team in performing administrative, clinical and trans-disciplinary (general) functions. The Medical Assistant (MA) program at Clackamas Community College is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) upon the recommendation of the Medical Assistant Educational Review Board, MAERB (Division of CAAHEP), 1361 Park Street, Clearwater, FL 33756; telephone: 727-210-2350, online: *www.caahep.org*

PROGRAM PREREQUISITES & REQUIREMENTS

The MA application with admission procedures, requirements, prerequisites and pertinent dates is available online, *www.clackamas.edu/healthSciences/*; at the Health Sciences Department and Student Advising Services at Harmony Campus, and at the Enrollment Service Center or Student Academic Support Services Department at the Oregon City Campus.

continued

Medical Assistant continued…

For successful completion of the MA program, applicants are advised that a high level of physical and mental stamina, manual dexterity, the ability to multitask, and a high degree of attention to detail will be required.

Prior to application the MA student candidate must:

- Meet the appropriate placement score in math either by taking the placement exam or by providing proof of a comparable assessment. CCC placements should be dated no earlier than 2008 or previous college coursework as documented by official college/university transcripts. To be eligible to apply, students must show placement by:
  - passing WR-095 or placement in WR-121
  - passing MTH-020 or placement in MTH-050/060
  - passing RD-090 or placement in RD-115
- During the multi-phase application process the applicant will be asked to provide:
  - proof of recent physical examination by a licensed healthcare provider,
  - proof of Oregon Health Authority required immunizations or proof of immunity and TB screen,
  - American Heart Association-Healthcare Provider CPR and Heartsaver First Aid certification cards; both of which must remain current throughout the entirety of the MA program
  - Medical Assistant students must meet statutory mandates for healthcare providers. Anyone with a criminal record may not be allowed in a healthcare facility as a student. The aim of this legislation is to prevent abuse situations with vulnerable adults and children. All students in the Health Sciences Department are required to have a criminal history background check and drug and alcohol test. If you have questions about criminal history disqualifiers, please reference *http://www.oregon.gov/dhs/chc/pages/tools.aspx* and read the provider crime lists for detailed information.
  - As instructed by the Health Sciences Department, complete the required criminal history background check (CBC) and Urine Drug Screen (UDS). NOTE: Successful students will be asked to repeat the criminal history and UDS prior to entering clinical placement.
- candidates accepted into the MA program must have successfully completed MA-110, Medical Terminology, and WR-121, English Composition or WR-101, Communication Skills: Occupational Writing, prior to beginning core curriculum. Please check the website as prerequisites may change from year to year.

PROGRAM OUTCOMES

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

- demonstrate entry-level employment skills,
- apply knowledge appropriate to pass national exam,
- demonstrate the ability to work within the scope of practice of a medical assistant,
- perform phlebotomy and other specimen collection skills using accepted technical practices,
- apply medical laws and ethical principles to medical assisting practice,
- apply infection control principles and techniques to the practice of medical assisting,
- consistently demonstrate patient safety skills,
- calculate and safely administer medications: oral and parenteral,
- apply critical thinking skills to administrative and clinical competencies,
- apply professional behaviors in all aspects of medical assisting,
- sit for the American Association of Medical Assistants national certification exam, *certification@aama.ntl.org* or the American Medical Technologists national certification exam, *www.americanmedtech.org*

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 of Clackamas Community College does not discriminate among applicants as to age, gender affiliation, sexual orientation, color, religion, or national origin.

For continuing education opportunities for healthcare providers see Healthcare Professional Development (XHPD) in the course description section of this catalog.

MEDICAL ASSISTANT CERTIFICATE PREREQUISITE TO ACCEPTANCE

COURSE		CREDITS
MA-110	Medical Terminology	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4

MEDICAL ASSISTANT CERTIFICATE

FALL TERM		CREDITS
BI-120	Introduction to Human Anatomy & 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	4

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	4
MA-118L	Examination Room Techniques Lab	1
MTH-054	Medication Calculations for Medical Assistants	4
PSY-101	Human Relations	3
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
Credits required for certificate		*53-54*

**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 either the CMA (AAMA) or the RMA (AMT) certification exam.

Note: All clinical/practicum courses are Pass/No Pass. All other courses are letter graded and must be passed with 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.

For the Certified Medical Assistant (CMA) exam, direct inquiries to: AAMA Certification Department at *www.aama-ntl.org* or by phone 800-228-2262.

For the Registered Medical Assistant (RMA) exam, direct inquiries to *www.americanmedtech.org* or by phone 800-275-1268.

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.

PROGRAM OUTCOMES
Microelectronics Systems Technology AAS Degree

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

- safely and professionally collaborate in an electronic technology-focused workplace,
- use and comprehend standard electronics terminology in communication,
- identify and isolate technology problems,
- identify electronic components including resistors, capacitors, inductors, diodes, transistors, amplifiers and digital logic gates;
- read specifications, symbols, schematics, ladder diagrams and assembly drawings;
- comprehend AC, DC, amps, volts, ohms, impedance, watts, frequency, apparent and reactive power;
- operate and interpret oscilloscopes, multimeters, signal generators, power supplies;
- assemble, disassemble, adjust and verify electronic equipment performance;
- use test procedures and test equipment to service and maintain equipment,
- demonstrate a comprehensive knowledge of the semiconductor manufacturing process including materials, processes, vacuum systems and quality control;
- apply technical knowledge of sensors and actuators to automated manufacturing and motion control,
- comprehend the theoretical elements of fluid power systems and apply this knowledge to design, installation and repair of industrial equipment;
- program and install PLCs to control manufacturing processes.

PROGRAM OUTCOMES
Microelectronics Systems Technology Certificate Degree

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

- safely and professionally collaborate in an electronic technology focused workplace,
- use and comprehend standard electronics terminology in communication,
- identify electronic compounds including resistors, capacitors, diodes, transistors, amplifiers, and digital logic gates;
- read specifications, symbols, schematics;
- comprehend AC, DC, amps, volts, ohms, impedance, watts, frequency, apparent and reactive power;
- operate and interpret oscilloscopes, multimeters, signal generators, power supplies;
- use test procedures to diagnose electronic equipment,
- demonstrate a basic knowledge of the semiconductor manufacturing process.

continued

Microelectronics Systems Technology continued…

CAREERS

Career opportunities may include fabrication technician, equipment technician and product test technician.

For information contact the Manufacturing Department, 503-594-3318.

MICROELECTRONICS SYSTEMS TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
EET-112	Electronic Test Equipment & Soldering	3
EET-137	Electrical Fundamentals I	4
MFG-107	Industrial Safety & First Aid	3
MFG-109	Computer Literacy for Technicians	3
MTH-050*	Technical Mathematics I	3
SM-150	Semiconductor Processing I	2
WR-101*	Communication Skills: Occupational Writing	3
SECOND TERM		
EET-139	Principles of Troubleshooting I	2
EET-141	Electrical Fundamentals II	4
EET-157	Digital Logic I	3
ESH-100	Environmental Regulations	2
MTH-080*	Technical Mathematics II	3
SM-160	Semiconductor Processing II	2
THIRD TERM		
EET-127	Semiconductor Circuits I	4
EET-142	Electrical Fundamentals III	4
SM-170	Semiconductor Processing III	2
SM-280	Electronics & Microelectronics/CWE	2
— —	Microelectronics Systems Technology program electives	3
— —	Human Relations requirement (see page 82)	3
Credits required for certificate		*55*

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
CH-104	Introductory Chemistry	5
EET-215	Electromechanical Systems I	2
EET-239	Principles of Troubleshooting II	2
MFG-104	Print Reading	2
— —	Microelectronics Systems Technology program electives	3
FIFTH TERM		
EET-250	Linear Circuits	3
MFG-140	Principles of Fluid Power	3
MFG-209	Programming and Automation for Manufacturing	3
SM-136	Photolithography	2
SM-280	Electronics & Microelectronics/CWE	2
MFG-123	Instrumentation & Controls	3
SIXTH TERM		
EET-230	Laser and Fiber Optics	3
MFG-133	Programmable Logic Controllers	3
SM-229	Vacuum Technology	2
— —	Microelectronics Systems Technology program electives	6
Credits required for degree		*99*

MICROELECTRONICS SYSTEMS TECHNOLOGY PROGRAM ELECTIVES:

Any course with a CDT, EET, RET, SM, MFG, or WLD prefix not already in the Microelectronics Systems Technology program.

*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.

ELECTRONICS ENGINEERING TECHNOLOGY

(Oregon Tech transfer courses)

The Manufacturing 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 Manufacturing Department, 503-594-3318.

Music Performance & Technology

Associate of Applied Science degree

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.

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.

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	2
MUS-101	Music Fundamentals	3
MUS-107	Introduction to Audio Recording I	3
MUS-111L	Music Notation Software I	1
MUS-127	Keyboard Skills I	2
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
WINTER TERM		
MUP-150	Contemporary Music Ensemble	1
MUP-171-191	Individual Lessons	
or MUP-171J-191J	Individual Lessons/Jazz	2
MUS-102	Music Fundamentals	3
MUS-108	Introduction to Audio Recording II	3
MUS-112L	Music Notation Software I	1
MUS-128	Keyboard Skills I	2
MUS-160	Songwriting I	2
— —	Music Performance & Technology program elective	2
SPRING TERM		
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II or higher	3-4
MUP-150	Contemporary Music Ensemble	1
MUP-171-191	Individual Lessons	
or MUP-171J-191J	Individual Lessons/Jazz	2
MUS-109	Introduction to Audio Recording III	3
MUS-113L	Music Notation Software I	1
MUS-129	Keyboard Skills I	2
MUS-161	Songwriting II	2
— —	PE/Health/Safety/First Aid requirement	1

MUSIC PERFORMANCE & TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE—2ND YEAR

FALL TERM		CREDITS
MUP-150	Contemporary Music Ensemble	1
MUP-171-191	Individual Lessons	
or MUP-171J-191J	Individual Lessons/Jazz	2
MUS-140	Careers in Music	3
MUS-142	Introduction to Electronic Music I: MIDI	3
COMM-100	Basic Speech Communication	4
— —	Music Business Skills elective	3-4
WINTER TERM		
MUP-150	Contemporary Music Ensemble	1
MUP-171-191	Individual Lessons	
or MUP-171J-191J	Individual Lessons/Jazz	2
MUS-141	Introduction to the Music Business	3
MUS-143	Electronic Music II: Sequencing, Audio Looping & Sound EFX	3
MUS-148	Live Sound Engineering	3
— —	Music Performance & Technology program elective	3
SPRING TERM		
MUP-150	Contemporary Music Ensemble	1
MUS-170	Introduction to Scoring Music for Media	2
MUP-171-191	Individual Lessons	
or MUP-171J-191J	Individual Lessons/Jazz	1
MUS-144	Electronic Music III: Digital Audio	3
MUS-280	Music/CWE	2
— —	Music Performance & Technology program elective	4-6
Credits required for degree		*90-95*

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

continued

Music Performance & Technology continued…

MUSIC PERFORMANCE & TECHNOLOGY PROGRAM ELECTIVES

COURSE		CREDITS
ART-116	Basic Design: Color Theory & Composition	4
ART-161	Photography I	3
ART-162	Photography I	3
ART-163	Photography I	3
ART-221	2D Animation: Design/Techniques	3
ART-225	Computer Graphics I	3
ART-226	Computer Graphics II	3
ART-227	Computer Graphics III	3
ART-262	Digital Photography & Imaging	3
BA-101	Introduction to Business	4
BA-104	Business Math	3
BA-111	General Accounting	4
BA-112	General Accounting	4
BA-119	Project Management Practices	2
BA-120	Project Management Fundamentals	3
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
CS-125P	Computer Publishing	3
CS-125R	Podcasting	3
DMC-104	Digital Video Editing	4
DMC-106	Animation & Motion Graphics	3
DMC-146	Entertainment Law & New Media	3
DMC-147	Music, Sound, and Movie Making	1
DMC-247	Music, Sound, and Movie Making	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	Voice 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	Voice Jazz Ensemble: Mainstream	2
MUP-241	College Orchestra	1
MUP-258	Chamber Ensemble	1
MUS-103	Music Appreciation	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	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 I	3
MUS-230	Music Media: Sex, Drugs, Rock	4
MUS-247	Music, Sound & Moviemaking	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-239	Creative Nonfiction Intensive	1
WR-240	Creative Writing: Nonfiction	4
WR-241	Creative Writing: Fiction	4
WR-242	Creative Writing: Poetry	4

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.

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

FALL TERM		CREDITS
MUS-107	Introduction to Audio Recording I	3
MUS-140	Careers in Music	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	Communication Between the Sexes	
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)	3-5
MUS-108	Introduction to Audio Recording II	3
MUS-141	Introduction to the Music Business	3
MUS-143	Introduction to Electronic Music II: Sequencing & Sampling	3
— —	Music Technology program basics	3-4
— —	Music Technology program electives	2-4
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		*50-60*

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	3
MUP-121	Chorale Ensemble: The Roots Project	1
MUP-122	Chamber Choir	3
MUP-125	Vocal Jazz Ensemble: Mainstream	3
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-130	Music & Media: Sex, Drugs, Rock & Roll	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-160	Songwriting I	2
MUS-161	Songwriting II	2
MUS-170	Introduction to Scoring Music for Media	2
MUS-205	Music Literature: History of Jazz	4
MUS-206	Music Literature: History of Rock	4
MUS-247	Music, Sound & Moviemaking	3

Nursing

Associate of Applied Science Degree

PROGRAM CODE: AAS.NURSING

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 1 (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 term to term. This one-term course consists of 150 contact hours including 75 hours of lecture and lab and 75 hours of clinical experience. Clinical hours begin the 6th 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	Certified Nursing Assistant 1	7 credits
NUR-100C	Certified Nursing Assistant 1 Clinical	0 credits

Upon successful completion of this 7 credit course, students may apply for the Oregon State Board of Nursing certification exam for nursing assistants (CNA 1).

continued

Nursing continued…

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 and RD-115 to be eligible to apply or an unofficial transcript indicating WR-095 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 *www.clackamas.edu/healthsciences/nursingassistant/*

NURSING ASSISTANT II – ACUTE CARE TRAINING (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 42 hours of lecture and lab instruction as well as 30 hours of clinical experience.

COURSE OFFERED--SUMMER, FALL, WINTER, SPRING TERMS:

NUR-101	Certified Nursing Assistant 2	3 credits

Before you will be permitted to enroll you must attend the Nursing Assistant 2 Mandatory Orientation. Specific details can be found in the course schedule and online. For more information email: *Health-Sciences-Questions@clackamas.edu*

NURSING PROGRAM
Clackamas Community College is a partner in the Oregon Consortium for Nursing Education (OCNE). The curriculum in OCNE nursing programs is a competency-based curriculum developed in collaboration with Oregon Health & Science University (OHSU) and other community colleges around the state. This curriculum, which has been approved by the Oregon State Board of Education as well as the Oregon State Board of Nursing, can ultimately culminate in a Baccalaureate of Science degree with a focus in nursing offered by OHSU. 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 application to the Registrar's Office by the deadline. Based on 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 physical examination by a licensed healthcare provider, immunizations, criminal history background check, and urine drug testing are required prior to clinical experience in the first term of the program. Technical standards related to the ability to perform safe patient care will need to be maintained while in the nursing program. Drug use and/or conviction of a felony may result in the Oregon State Board of Nursing denying licensure upon graduation.

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

- demonstrate the ability to choose personal and professional actions that are based on a set of shared core nursing values,
- demonstrate the effective use of reflection, self-analysis and self-care to develop insight in the delivery of nursing care;
- demonstrate the ability to engage in intentional, life-long learning;
- demonstrate the ability to be an effective leader in nursing and health care,
- demonstrate the ability to collaborate as part of a heath care team,
- demonstrate the ability to practice within, utilize, and contribute to the broader health-care system;
- demonstrate the ability to practice relationship-centered care,
- demonstrate the ability to make sound clinical judgments,
- demonstrate the ability to choose and apply the best available evidence.

The OCNE curriculum is designed as a four-year course of study 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

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.

For continuing education opportunities for healthcare providers see Healthcare Professional Development (HPD) in the course description section on page 210.

NURSING APPLICATION REQUIREMENTS

Information regarding the program, the application process and pre-nursing academic advising sessions is available at *www.clackamas.edu/HealthSciences/Nursing/*

Students are eligible to be considered for admission to the nursing program after completing 30 credit hours of the Prerequisite/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. Completion of BI-234 prior to entry into the nursing program is strongly recommended. Failure to pass this course during fall term will prevent progression in the nursing program. As of fall term of the 2018-19 catalog year BI-234 will be a pre-requisite to the nursing program and must be completed prior to the start of the first term for accepted nursing students.

A total of 45 credit hours of the Prerequisite/Required Preparatory courses must be completed prior to the start of the first term of the nursing program.

- Minimum Prerequisite/Required Preparatory Course credits to apply: 30
- Prerequisite/Required Preparatory Course credits prior to starting NRS course work during first term of nursing program: 45

Completion of all Prerequisite/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 Prerequisite/Required Preparatory courses.

NURSING PREREQUISITES/REQUIRED PREPARATORY COURSES

COURSE		CREDITS
BI-231	Human Anatomy/Physiology I	4
BI-232	Human Anatomy/Physiology II	4
BI-233	Human Anatomy/Physiology III	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
— —	Humanities, Social Science, or Natural Science	13

- The following courses or their equivalents will meet the 8 credit minimum writing requirement:

  WR-121, WR-122 and either WR-123 or WR-227 when each course is 3 credits each

  WR-121 and WR-122 when each course is 4 credits

- Completion 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 hour prerequisite minimum required for entry into the nursing program.
- At least six credits must come from Social Sciences
- See list below for approved prerequisite/elective courses

Note: Courses listed above may have prerequisites. See course descriptions for those requirements.

NURSING ASSOCIATE OF APPLIED SCIENCE DEGREE:

FIRST TERM		CREDITS
BI-112*	General Biology for Health Sciences	
or	Biology with genetics	4-5
BI-234	Introductory Microbiology**	4
NRS-110	Foundations of Nursing – Health Promotion	5
NRS-110C	Foundations of Nursing – Health Promotion Clinical	4
PE-185	Physical Education***	0-1

*BI-112 meets the Biology with genetics requirement and must be completed prior to start of second year of nursing program.

** Currently BI-234 must be completed prior to start of second term of the nursing program. As of Fall of the 2018-19 catalog year BI-234 will be a pre-requisite to the nursing program and must be completed prior to the start of the first term for accepted nursing students.

*** Current CPR for Healthcare Providers (AHA) is required prior to first term of the first year of the nursing program and meets PE requirement.

SECOND TERM		
NRS-111	Foundations of Nursing in Chronic Illness I	3
NRS-111C	Foundations of Nursing in Chronic Illness I Clinical	3
NRS-230	Clinical Pharmacology I	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-231	Clinical Pharmacology II	3
NRS-233	Pathophysiological Processes II	3
— —	Humanities, Social Science or Natural Science electives, if needed	3

SUMMER TERM OPTION		
BI-112*	General Biology for Health Sciences	
or	Biology with Genetics	4-5

*BI-112 meets the Biology with genetics requirement and must be completed prior to start of second year of nursing program.

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
— —	Humanities, Social Science or Natural Science electives, if needed	6

continued

Nursing continued…

FIFTH TERM

NRS-221	Nursing in Chronic Illness II & End of Life	3
NRS-221C	Nursing in Chronic Illness II & End of Life Clinical	6
— —	Humanities, Social Science or Natural Science electives, if needed	6

SIXTH TERM

NRS-224	Integrative Practicum	2
NRS-224C	Integrative Practicum Clinical	7
WR-123*	English Composition	
or WR-227	Technical Report Writing	3-4
— —	Humanities, Social Science or Natural Science electives, if needed	4
Credits required for degree		*90-93*

*Required only if 8 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.

APPROVED COURSES TO MEET PREREQUISITE/ELECTIVE CREDIT REQUIREMENTS FOR THE NURSING PROGRAM

NOTE: All electives must be taken at the 100 level or higher unless otherwise noted.

HUMANITIES (ARTS & LETTERS)

Courses used in this area must be at least three credits.

Select courses with a prefix of:

ASL, FR, GER, RUS, SPN (other foreign languages are accepted; languages must be 200 level)

ART, DMC, ENG, HUM (except HUM-100), J, MUP, MUS, PHL, R, TA

COMM (courses numbered COMM-126 and above)

WR (except WR-101, 121, 122, 123 or 227)

SOCIAL SCIENCE

Courses used in this area must be at least three credits.

Select courses with a prefix of:

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

NATURAL SCIENCES (SCIENCE/MATH/COMPUTER SCIENCE)

Courses used in this area must be at least six credits.

Select courses with a prefix of:

ASC, BI* (except BI-163), BOT, CH (except CH-150), CS, ESR, G (except G-119, G-124), GS (except GS-160), MTH (MTH-095** accepted), PH, Z

*Concurrent enrollment required for BI-160/BI-160L or BI-165C/BI-165CL

**MTH-095 may be applied toward prerequisite credits but not toward the BSN degree.

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 foreign language, or two terms of college-level foreign language credit (includes American Sign Language) or a foreign 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 Based Care: Chronic Illness & Health Promotion
NRS-411	Epidemiology
NRS-412	Leadership Outcomes Management in Nursing
NRS-424*	Clinical Immersion I
	Capstone I or Minor course work
NRS-425	Clinical Immersion 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.

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.

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	3
WR-101	Communication Skills: Occupational Writing	3
— —	Human Relations requirement (see page 82)	3
Credits required for certificate		*48*

Paraeducator

Certificate

PROGRAM CODE: CC.PARAEDUCATOR

The Paraeducator Certificate is designed for those who would like to work as instructional assistants in educational settings.

Course work provides a basic foundation in theory and practical application in how children learn, teaching strategies, developing positive relationships with students, integrating technology into the learning environment, addressing the needs of special-needs students and the role of the classroom in a multicultural society.

Course work includes cooperative work experience and core courses in education, many of which are offered online to meet the needs of currently employed teacher assistants and students exploring educational careers.

The No Child Left Behind Act of 2002 now mandates that paraeducators who work in Title I schools have two years of college, an associate's degree, or pass a competency test equivalent to sophomore level course work in reading, writing, math and teaching strategies.

PROGRAM OUTCOMES

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

- demonstrate appropriate strategies and techniques to provide instructional support to students of diverse populations,
- demonstrate attitudes and behaviors that are appropriate in meeting the needs of diverse populations,
- apply best practices in classroom management to optimize the potential for student learning,
- practice ethical and legal standards of conduct,
- apply technology to support teaching, learning, and communication,
- demonstrate competence in core skill areas of written and oral communications, reading, and mathematics.

PORTLAND STATE UNIVERSITY TRANSFER AGREEMENT

Portland State University will accept the Paraeducator Certificate as part of a 90 credit Associate of General Studies. Talk with Laurette Scott at 503-594-3840 for requirements.

CAREERS

Career opportunities include paraeducator positions in public or private elementary or secondary schools.

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

PARAEDUCATOR CERTIFICATE

FALL TERM		CREDITS
ED-100	Introduction to Education	3
ED-113	Instructional Strategies in Reading & Language Arts	3
ED-131	Instructional Strategies	3
ED-235	Educational Technology	3
WINTER TERM		
ED-169	Overview of Students with Special Needs	3
ED-200	Foundations of Education	3
ED-229	Learning and Development	3
ED-254	Instructional Strategies for Dual Language Learners	3
SPRING TERM		
ED-114	Instructional Strategies in Math and Science	3
ED-130	Comprehensive Classroom Management	3
ED-258	Multicultural Education	3
ED-280	Practicum/CWE	3
SUMMER TERM		
MTH-065	Algebra II	4
WR-121	English Composition	4
— —	General electives (any college level course)	3
Credits required for certificate		*47*

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 the Automotive Department at 503-594-3051 or Dave Bradley at *bradleyd@clackamas.edu*

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 & Logistics Customer Service Skills	1-3
TTL-180	Transportation & Logistics/CWE	6
Credits required for certificate		*17-19*

Project Management

Associate of Applied Science Degree

PROGRAM CODE: AAS.PROJECTMGMT

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 PMP professional designation.

PROGRAM OUTCOMES

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

- identify project management's five process group along with primary activities associate with each,
- 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,
- deliver persuasive and informative presentations,
- 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;
- demonstrate appropriate written communication–emails, memos, and reports;
- develop and maintain budgets to track financial and human resources,
- manage a project from initiation through closing, ensuring that stakeholder requirements have been met.

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 Michael Moiso, 503-594-3770 or *mmoiso@clackamas.edu*

PROJECT MANAGEMENT
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-120	Project Management Fundamentals	3
BA-122	Teamwork	3
BA-123	Leadership & Motivation	3
BA-131	Introduction to Business Computing	4
— —	PE/Health/Safety/First Aid requirement (see page 82)	1

WINTER TERM

BA-111 or BA-211	General Accounting Financial Accounting I	4
BA-125	Advanced Project Management Tools	5
BT-177	Microsoft Project	3
WR-121	English Composition	4

SPRING TERM

BA-101	Introduction to Business	4
BA-124	Negotiation	3
BA-126	Project Management Workshop	3
BA-217	Budgeting for Managers	3
CS-135S	Microsoft Excel or any BA/BT course not already used in Project Management program	3

PROJECT MANAGEMENT
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-205	Business Communications with Technology	4
BA-223	Principles of Marketing	4
BA-285	Human Relations in Business	4
MTH-065	Algebra II	4
WINTER TERM		
BA-206	Management Fundamentals	4
BA-226	Business Law I	4
COMM-111	Public Speaking	4
— —	Any BA/BT course not already used in Project Management Program	3
SPRING TERM		
BA-225 or WR-227	Business Report Writing Technical Report Writing	3-4
BA-268	Applied Project Demonstration	3
BA-280	Business/CWE	3
— —	Any BA/BT course not already used in Project Management program	4
Credits required for degree		*90-91*

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 Michael Moiso, 503-594-3770 or *mmoiso@clackamas.edu*

PROJECT MANAGEMENT CERTIFICATE

COURSE		CREDITS
BA-120	Project Management Fundamentals	3
BA-122	Teamwork	3
BA-123	Leadership and Motivation	3
BA-124	Negotiation	3
BA-125	Advanced Project Management Tools	5
BA-126	Project Management: Workshop	3
BT-177	Microsoft Project	3
Credits required for certificate		*23*

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 Michael Moiso, 503-594-3770 or *mmoiso@clackamas.edu*

continued

Project Management Leadership & Communication continued…

PROJECT MANAGEMENT LEADERSHIP & COMMUNICATION CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BA-122	Teamwork	3
BA-123	Leadership & Motivation	3
BA-124	Negotiation	3
BA-205	Business Communications with Technology	4
BA-285	Human Relations in Business	4
COMM-111	Public Speaking	4
Credits required for certificate		*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 associate 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 Michael Moiso, 503-594-3770 or *mmoiso@clackamas.edu*

PROJECT MANAGEMENT TOOLS & TECHNIQUES CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BA-120	Project Management Fundamentals	3
BA-125	Advanced Project Management Tools	5
BA-126	Project Management Workshop	3
BA-217	Budgeting for Managers	3
BT-177	Microsoft Project	3
CS-135S	Microsoft Excel	3
Credits required for certificate		*20*

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.

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 Manufacturing 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	3
RET-200	Renewable Energy Systems	4
RET-240	Alternative Fuel Systems	4
SECOND TERM		
EET-139	Principles of Troubleshooting	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	Manufacturing Processes	3
MFG-103	Machining for the Fabrication & Maintenance Trades	3
RET-211	Renewable Energy II: System Fundamentals	3
RET-280	Renewable Energy Technology/CWE	2
WR-101	Communication Skills: Occupational Writing	3
__ __	Human Relations requirement (see page 82)	3
Credits required for certificate		*48*

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-215	Electromechanical Systems I	2
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 System	3-5
MFG-104	Print Reading	2
RET-213	Renewable Energy III: Installation & Maintenance	3
__ __	Renewable Energy Technology program elective	3
FIFTH TERM		
MFG-123	Instrumentation and 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		
MFG-133	Programmable Logic Controllers	3
MFG-221	Materials Science	3
RET-217	Renewable Energy Capstone	3
RET-280	Renewable Energy Technology/CWE	2
WLD-150	Welding Processes	4
__ __	Renewable Energy Technology program elective	3
Credits required for degree		*96-97*

RENEWABLE ENERGY TECHNOLOGY PROGRAM ELECTIVES

Any course with a CDT, EET, ERM, GIS, MET, MFG, RET, SM or WLD prefix.

Energy Systems Maintenance Technician

Career Pathway Certificate

PROGRAM CODE: CC.ENSYSMANTECH

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 Manufacturing Department at 503-594-3318.

continued

Energy Systems Maintenance Technician continued…

ENERGY SYSTEMS MAINTENANCE TECHNICIAN CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
EET-139	Principles of Troubleshooting	2
MFG-104	Print Reading	2
MFG-107	Industrial Safety & First Aid	3
MFG-130	Basic Electricity	3
MTH-050	Technical Mathematics I	3
RET-200	Renewable Energy Systems	4
— —	Energy Systems Maintenance Technician program electives	6-8
Credits required for certificate		*23-25*

ENERGY SYSTEMS MAINTENANCE TECHNICIAN PROGRAM ELECTIVES

Select 6-8 Elective credits from the following:

COURSE		CREDITS
MET-170	Manufacturing Processes	3
MFG-103	Machining for the Fabrication & Maintenance Trades	6
RET-209	Renewable Energy I: Energy Efficiency	3
WLD-150	Welding Processes	4
or WLD-102	Introduction to Welding	2

Retail Management Expanded Certificate

Certificate

PROGRAM CODE: CC.RETAILMGMT1

This certificate is sponsored by members of the retail industry and is recommended for students currently working 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,
- evaluate retail management strategies to make sound decisions.

CAREERS

Career opportunities include retail clerks, cashiers, manager trainees, sales associates, and other similar positions in all types of retail establishments.

For information contact Pam Akini, 503-594-3196 or *pamc@clackamas.edu*

RETAIL MANAGEMENT CERTIFICATE

FALL TERM		CREDITS
BA-285	Human Relations in Business	4
BA-131	Introduction to Business Computing	4
COMM-111	Public Speaking	4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
WINTER TERM		
BA-214	Business Communications	
or BA-205	Business Communications with Technology	4
BA-206	Management Fundamentals	4
BA-217	Budgeting for Managers	3
or BA-272	Financial Analysis, Accounting, and Budget Forecasting (Retail)	4
BA-223	Principles of Marketing	4
SPRING TERM		
BA-224	Human Resource Management	4
BA-249	Retailing	3
BA-104	Business Math	3
or MTH-105	Introduction to Contemporary Math	4
— —	Any BA/BT course not already included in the Retail Management program	3-6
Credits required for certificate		*45-48*

*For this certificate, BA-104 meets the Related Instruction Computation requirement.

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

Retail Management

Certificate

PROGRAM CODE: CC.WAFCRETAILMGT

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.

CAREERS

Career opportunities include retail clerks, cashiers, manager trainees, sales associates and other similar positions in all types of retail establishments.

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

WESTERN ASSOCIATION OF FOOD CHAINS (WAFC) RETAIL MANAGEMENT CERTIFICATE

COURSE		CREDITS
BA-285	Human Relations in Business	4
BA-131	Introduction to Business Computing	4
BA-214	Business Communications	
or BA-205	Business Communications with Technology	3-4
BA-206	Management Fundamentals	4
BA-223	Principles of Marketing	4
BA-224	Human Resource Management	4
BA-249	Retailing	3
BA-272	Financial Analysis, Accounting, and Budget Forecasting (Retail)	
or BA-104	Business Math	
or BA-217	Budgeting for Managers	4-6
Credits required for certificate		*30-33*

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.

First-Line Supervisor Fundamentals

Career Pathway Certificate

The First-Line Supervisor Fundamentals career pathway 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 career pathway builds directly into the Retail Management certificate, the Retail Management Expanded certificate and the AAS Business.

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, Power Point 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 Pamela Akini, 503-594-3196 or *pamc@clackamas.edu*

FIRST-LINE SUPERVISOR FUNDAMENTALS CAREER PATHWAY CERTIFICATE

Recommended sequence.

COURSE		CREDITS
BA-285	Human Relations in Business	4
BA-131	Introduction to Business Computing	4
BA-214	Business Communication	3
or BA-205	Business Communication with Technology	4
BA-206	Management Fundamentals	4
Credits		*15-16*

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 local urban 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, fruit and aquaponics are covered. Students may begin this program any term.

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;
- pass the ODA Pesticide Laws & Safety exam.

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 Horticulture Department, 503-594-3292 or *lorettam@clackamas.edu*

continued

Organic Farming continued…

ORGANIC FARMING CERTIFICATE

FALL TERM		CREDITS
HOR-113	Organic Farming Practicum/Fall	3
HOR-124	Food Harvest	3
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
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	
or MTH-065	Algebra II (or higher level math)	3-5
SPRING TERM		
HOR-120	Pesticide Laws & Safety	1
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 and Berry Growing	3
HOR-284	Organic Farming-Campus Farm/CWE	3
HOR-285	Organic Farming/CWE	3
Credits required for certificate		*56-60*

ORGANIC FARMING PROGRAM ELECTIVES

COURSE		CREDITS
BA-223	Principles of Marketing	4
BA-250	Small Business Management	3
HOR-125*	Food Production in the Willamette Valley	3
HOR-134	Herb Growing & Gardening	1
HOR-149	Aquaponics	1
HOR-231	Irrigation & Drainage Design	3
HOR-240	Irrigation & Drainage Practices	3
HOR-246	Organic Farming and Gardening	3
HOR-250	Western Herbs	2
HOR-251	Herbal Products	1
HOR-252	Kitchen Herbs	1

* Offered alternate years

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 certification exams.

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 licensure 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 licensure exams for Oregon wastewater treatment and collection systems, additionally pass the Washington State Operator In Training exams in water treatment and distribution;
- maintain and operate water and waste water treatment facilities and collection and water distribution systems,
- utilize mathematical skills to solve licensure 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
CH-104	Introductory Chemistry	
or CH-221	General Chemistry	5
COMM-100	Basic Speech Communication	
or PSY-101	Human Relations	3
MTH-082A	Wastewater Math I	1
MTH-082B	Waterworks Math I	1
WET-110	Wastewater Operations I	3
WET-111	Waterworks Operations I	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
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/Wastewater Collection Systems	3
WET-123	Environmental Chemistry I	3
SPRING TERM		
BA-131	Introduction to Business Computing	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		*58-59*

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
WET-241	Aquatic Microbiology	4
WET-242	Hydraulics/Water & Wastewater	3
WET-245	Instrumentation & Control	4
WET-280	Water & Environmental Projects II	5
WINTER TERM		
GIS-201	Introduction to Geographic Information System	3
MTH-095	Algebra III	
or MTH-111	College Algebra	4-5
SPRING TERM		
BA-131	Introduction to Business Computing	
or CS-121	Computer Applications	3-4
HE-252	First Aid/CPR/AED	3
WET-109	Backflow Assembly Operation and Testing	3
Credits required for degree		*90-93*

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 Operation III	3 credits
WET-031	Water Treatment	3 credits
XWET-C001	1 Day Cross Connection Specialist Update	(CEU)
XWET-C002	1 Day Tester Renewal	(CEU)
XWET-C003	2 Day Tester Retrain/Renewal	(CEU)
XWET-C004	4 Day Cross Connection Specialist	(CEU)
XWET-C005	5 Day Backflow Tester Course	(4.0 CEU)
XWET-C006	Water Certification Review	(CEU)
XWET-C007	Water Environment School	(2.3 CEU)
XWET-C008	Waterworks School	(2.0 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.

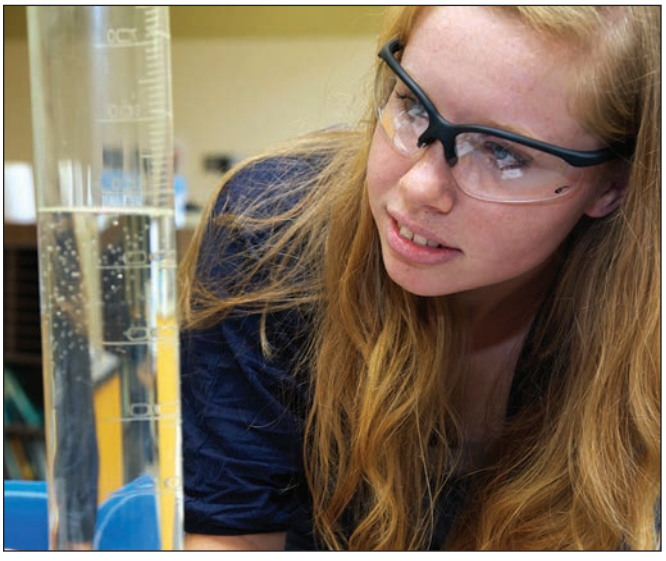
CAREERS

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
WET-245	Instrumentation & Control	4
WINTER TERM		
MTH-082E	Math for High Purity Water	1
WET-125	High Purity Water Production I	3
SPRING TERM		
WET-135	High Purity Water Production II	4
WET-180	Water & Environmental Projects I	5
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, multimedia 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, WR-095 Paragraph to Essay, and MTH-060 Algebra I or placement in BA-131 Introduction to Business Computing, WR-121 English Composition and MTH-065 Algebra II. This is an open program. Students may take any class in the program for which they have completed the prerequisite.

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.

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-150	Computer Technician Orientation	3

WINTER TERM

CS-133S	Introduction to JavaScript & Server Side Scripting	3
CS-179	Networking I	
or CS-275	Database Design	3
CS-181	CMS Web Development	3
CS-195	Flash Web Development	3

SPRING TERM

CS-135I	Advanced Web Design with Dreamweaver	3
CS-240L	Linux Administration	4
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 of math	4
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-240W	Windows Desktop Administration	3
CS-179	Networking I	
or CS-275	Database Design	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-221	2D Animation: Design/Techniques	3
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
Credits required for degree		*95-96*

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.

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*

continued

Web Design continued…

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-150	Computer Technician Orientation	3
WINTER TERM		
CS-133S	Introduction to JavaScript & Server Side Scripting	3
CS-179	Networking I	
or CS-275	Database Design	3
CS-181	CMS Web Development	3
CS-195	Flash Web Development	3
SPRING TERM		
ART-226	Computer Graphics II	
or CS-240L	Linux Administration	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
WR-121	English Composition	4
— —	Human Relations requirement (see page 82)	3-4
Credits required for certificate		*51-53*

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
- 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

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 work force, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information.

For information contact the Manufacturing Department, 503-594-3318.

WELDING TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
MFG-107	Industrial Safety & First Aid	3
MTH-050*	Technical Mathematics I	3
WLD-100	Welders' 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-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
WLD-200	Welders' Print Reading II	3
WR-101*	Communication Skills: Occupational Writing	3
THIRD TERM		
MFG-103	Machining for the Fabrication & Maintenance Trades	3
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
Credits required for certificate		*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
— —	Welding Technology program elective	3
FIFTH TERM		
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
— —*	General electives (any college level course)	3
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
Credits required for degree		*95*

* 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 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.

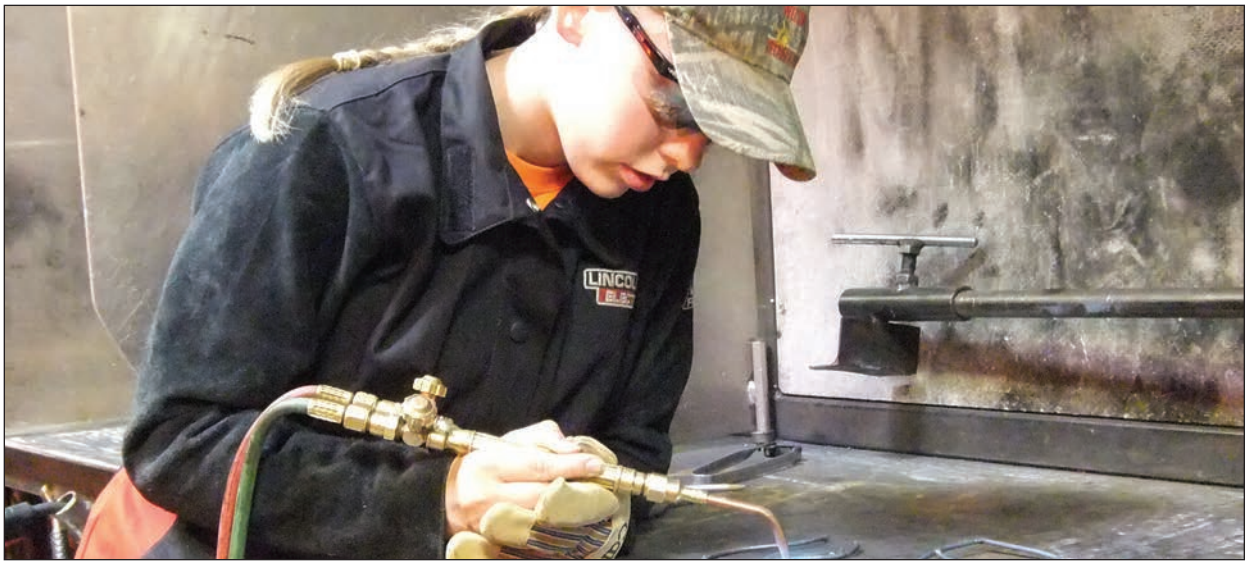
For information contact the Manufacturing Department, 503-594-3318.

ENTRY LEVEL WELDING TECHNICIAN CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
MFG-107	Industrial Safety & First Aid	3
WLD-100	Welders' Print Reading	3
WLD-250	Welding Fabrication I Beginning Project	4
— —	Entry Level Welding Technician program electives	11-12
Credits required for certificate		*21-22*

ENTRY LEVEL WELDING TECHNICIAN PROGRAM ELECTIVES

COURSE		CREDITS
MFG-103	Machining for the Fabrication and Maintenance Trades	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



Course Descriptions

www.clackamas.edu

Education That Works

Clackamas Community College

Course Descriptions

AB

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

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
A hands-on course for street rod enthusiasts. Providing instruction on panel forming, welding, basic body work and repair on you own 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, Fall/Winter/Spring/Summer
This course provides 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.

AB-112 Collision Repair Welding I
2 credits, Fall/Winter/Spring
Focus 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 welding, cutting and forming.

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. Required: Current enrollment in or successful completion of 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 (S-TRSW), and other advanced welding techniques specific to collision damage repair. Prerequisite: Pass AB-112 or instructor consent.

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. Prerequisite: AB-113 or instructor consent.

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 - Audatek
2 credits, Winter
Provides detailed instruction in the use of modern computerized estimating systems in the collision repair field. Focus is on Audatek software. Prerequisite: AB-149 or instructor consent.

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. Prerequisite: AB-149 or instructor consent.

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. Prerequisite: AB-133 or instructor consent.

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. Prerequisite: AB-222 or instructor consent.

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. Prerequisite: AB-224 or instructor consent.

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 repair techniques and equipment/safety procedures. Prerequisite: AB-123 or instructor consent.

AB-280 Collision Repair/CWE
2-6 credits,
Fall/Winter/Spring/Summer
Cooperative work experience. Work-based learning experience in an auto body repair shop. Corequisite: CWE-281. Required: Instructor consent.

ABE

Courses with this prefix will not transfer to a four-year institution.

Adult Basic Education

ABE-012 Adult Basic Education
0 credit, 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: Instructor consent.

ABR

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Auto Body/Collision Repair and 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. Required: Current enrollment in or successful completion of AB-112, and AB-113.

ABR-127 Collision Repair/Refinishing II
6 credits, Fall/Winter/Spring
Application of solvent and waterborne finishes, including spot repairs, color matching, complete refinishing, and problem solving. Introduction to computerized color information retrieval and mixing. Prerequisite: ABR-125 or instructor consent.

ABR-129 Collision Repair/Refinishing III
6 credits, Fall/Winter/Spring
Application of solvent and waterborne basecoats and tri-coats and urethane topcoats, using both foreign and domestic refinish systems. Includes complete refinishing, spot and panel painting, color matching and problem solving. Prerequisite: ABR-127 or instructor consent.

ABR-142 Airbrush Art
2 credits, Fall
Includes origination or repair of automotive art, murals, lettering, logos, etc. Techniques may be applied to signage and manicurist projects. Topics include airbrush selection and maintenance, layouts and masking, colors and blending.

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-162 Basic Automotive Pinstriping
2 credits, Winter
Matching factory striping colors and patterns. Designing and applying custom designs. Integrating striping into graphic designs. Covers necessary materials and tools.

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. Prerequisite: ABR-129 or instructor consent.

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. Prerequisite: ABR-225 or instructor consent.

AM

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Automotive Service Technology

AM-100 Automotive Fundamentals
3 credits, Fall/Winter/Spring
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 automatic consumer and car owner.

AM-106 Fix Your Own Car
2 credits, Fall/Winter/Spring/Summer
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 up to 12 credits.

AM-118 Small Engine Repair
3 credits, Fall/Winter/Spring
This course is designed to provide an overview of basic small engine maintenance, operation and repair. It covers safety, small engine theory, electrical systems, and troubleshooting. Classroom instruction covering theory of operation, 2 cycle and 4 cycle designs and applications, combined with hands-on live projects provides the student the opportunity to learn basic principles of small engine operation, including outdoor equipment, motorcycles, and A.T.V.'s.

AM-121 General Auto Repair I
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 first term automotive students. Prerequisites: Current enrollment in or successful completion of: AM-129, AM-130, AM-131, AM-133, AM-224 or AM-235. Required: Instructor consent.

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. Prerequisite: AM-121 or instructor consent.

AM-129 Electrical Systems
7 credits, Fall
This course includes general electrical system diagnosis; battery diagnosis and service; starting system diagnosis and repair; charging system diagnosis and repair; lighting systems diagnosis and repair; ignition system diagnosis and repair. Prerequisite: Pass MTH-020 or placement in MTH-050, pass WRD-080 or placement in WRD-090; or instructor consent.

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. Prerequisite: Pass MTH-020 or placement in MTH-050, pass WRD-080 or placement in WRD-090; or instructor consent.

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. Prerequisite: Pass MTH-020 or placement in MTH-050, pass WRD-080 or placement in WRD-090; or instructor consent.

AM-133 Engine Systems
7 credits, Spring
A course in engine repair. Includes design, construction, testing, maintenance, repair, and rebuilding.

AM-175 Advanced Mechanic Studies
3 credits, Fall/Winter/Spring
Lab course for currently enrolled automotive students wishing to specialize in specific areas of automotive repair. Recommended: Be able to work independently with minimal help. Prerequisites: AM-129, AM-130, AM-131, AM-133, AM-224, AM-235, AM-243, AM-244, AM-245. Required: Second-year Automotive Service Technology student or previously enrolled in the Automotive Service Technology program, and instructor consent.

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. Recommended: Be able to work independently with minimal help. Prerequisites: AM-129, AM-130, AM-131, AM-133, AM-224, AM-235, AM-243, AM-244, AM-245. Required: Second-year Automotive Service Technology student or previously enrolled in the Automotive Service Technology program, and instructor consent.

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. Recommended: Be able to work independently with minimal help. Prerequisites: AM-129, AM-130, AM-131, AM-133, AM-224, AM-235, AM-243, AM-244, AM-245. Required: Second-year Automotive Service Technology student or previously enrolled in the Automotive Service Technology program, and instructor consent.

AM-223 Hybrid Service Technology
3 credits, Fall/Winter/Spring
Provide 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. Prerequisite: AM-224 or instructor consent.

AM-224 Comfort Systems
4 credits, Spring
Covers design, construction, testing, maintenance, and repair of automotive heating and air conditioning systems. Prerequisite: Pass MTH-020 or placement in MTH-050, pass WRD-080 or placement in WRD-090; or instructor consent.

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. Recommended: Pass 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 transmissions, 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. Prerequisite: Pass AM-129 with a C or better, or instructor consent.

AM-244 Advanced Electrical Systems
7 credits, Winter
Includes an in-depth study of systems that affect engine performance and information on computerized diagnostic equipment. Covers diagnosis/repair of accessory systems, supplemental restraint systems and advanced diagnosis of electrical/electronic systems. Prerequisite: Pass AM-129 with a C or better, or instructor consent.

AM-245 Automatic Transmission Systems
7 credits, Fall
Provides students with knowledge of 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. Prerequisite: Pass AM-129 with a C or better, or instructor consent.

AM-280 Auto Mechanics/CWE
2-6 credits
Fall/Winter/Spring/Summer
Cooperative work experience. Work-related learning experience in an auto repair shop or auto dealership. Corequisites: CWE-281. Required: Instructor consent.

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: Pass WRD-090 or placement in RD-115.

ANT-102 Archaeology & Prehistory
4 credits, Fall/Winter/Spring
Introduces the methods 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: Pass WRD-090 or placement in RD-115.

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: Pass WRD-090 or placement in RD-115.

ANT-231 Indians 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: Pass WRD-090 or placement in RD-115.

ANT-232 Indians of North America
4 credits, Fall/Winter/Spring
A broad survey of the cultures, arts, and history of Native Americans north of Mexico. Uses archaeological, ethnohistorical, 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: Pass WRD-090 or placement in RD-115.

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 and/or archaeology. Corequisite: CWE-281. Required: Instructor consent.

ART

Art

ART-100A Jewelry Making Techniques
1 credit, Fall/Winter/Spring
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-100B Ceramic Making Techniques
1 credit, not offered every year
Various topics will introduce techniques in clay construction, kiln construction, firing methods, glazing and/or ceramic methods. Students will create and design work using clay and/or clay materials. Historical and contemporary issues related to ceramics will be presented and discussed. May be repeated for up to 3 credits.

ART-101 Art Appreciation
3 credits, Fall
Discover the fundamentals of thinking about and creating art through readings, class discussions, art projects and gallery/museum tours. This course will examine history, ideas and issues associated with art making and culture from ancient time period to 20th century time period.

ART-102 Art Appreciation
3 credits, Winter
Discover the fundamentals of thinking about and creating art through readings, class discussions, art projects and gallery/museum tours. This course will examine current history, culture, ideas and issues associated with art and culture. Focus on modern and contemporary art.

ART-103 Art Appreciation
3 credits, Spring
Discover the fundamentals of thinking about and creating art through readings, class discussions, art projects and gallery/museum tours. This course will examine history, culture, ideas and issues associated with art making and culture. Focus on the formalism of art, architecture and design.

ART-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 Adobe After Effects. Previous experience with computer graphics and digital video is recommended. Recommended: ART-221, ART-225, ART-226, DMC-104.

ART-107 Animation & Motion Graphics II
3 credits, Winter/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 aspects of After Effects to create successful motion graphics projects. Previous experience with computer graphics and digital video is recommended. Recommended: ART-221, ART-225, ART-226, DMC-104.

ART-108 Animation & Motion Graphics III
3 credits, Spring
Continuation of the process of animation and motion graphics design. This project-based course will explore advanced aspects of experimental and new technological approaches to creating digital effects and animation for video and web-based applications. Previous experience with computer graphics and digital video is recommended. Students will learn advanced aspects of After Effects to create successful motion graphics projects. Recommended: ART-221, ART-225, ART-226, DMC-104.

ART-115 Basic Design: Two Dimensional Design
4 credits, Fall
Acquaint students with the vocabulary of composition and the elements and principles of design. Develop creative composition and analytical skills through projects and critiques. Examine historical and contemporary issues and ideas related to visual composition.

ART-116 Basic Design: Color Theory & Composition
4 credits, Fall/Winter/Spring
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: Three Dimensional Composition
4 credits, Fall/Winter/Spring
Examine the elements of form, space, structure and sculpture. Create works of art using various sculptural processes. Historical and contemporary issues and ideas relating to sculpture and 3-dimensional design.

ART-131 Drawing
4 credits, Fall
Introduces drawing tools, materials, techniques, elements of composition; line, gesture, color and value. Projects will involve observational drawing with a focus on Still Life and its relationship to volume and form on a two-dimensional plane. Assignments include drawings, assigned readings, term papers and group critiques of drawing projects. Historical issues of drawing will be examined.

ART-132 Drawing
4 credits, Winter
Introduces drawing tools, materials, techniques, elements of composition; line, gesture, color 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 drawings, assigned readings and group critiques of drawing projects.

ART-133 Drawing
4 credits, Spring
Introduces drawing tools, materials, techniques, elements of composition; line, gesture, color and value. Projects will involve observational drawing with a focus on landscape and its relationship to volume and form on a two-dimensional plane. Assignments include drawings, assigned readings, term papers and group critiques of drawing projects. This course emphasizes space, perspective and composition.

ART-161 Photography I
3 credits, Fall/Winter/Spring
Introduction to basic camera operation and darkroom processes in developing and printing film. Elements of composition, content, and historical reference will be explored. Required: Access to a 35mm camera with adjustable exposure controls.

ART-162 Photography II
3 credits, Winter/Spring
Continuation of the exploration of camera operation and darkroom processes in developing and printing film. Elements of composition, content, and historical reference will be explored. Prerequisites: Pass ART-161 or instructor consent. Required: Access to a 35mm camera with adjustable exposure controls.

ART-163 Photography III
3 credits, Spring
Continuation of the exploration of camera operation and darkroom processes in developing and printing film. Elements of composition, content, and historical reference will be explored. Prerequisites: Pass ART-161 and ART-162 or instructor consent. Required: Access to a 35mm camera with adjustable exposure controls.

ART-181 Painting: Plein Air (Outdoors)
1 credit, not offered every year
This course will familiarize students with the pleasures and challenges of painting en plein air -- outdoor painting. The class will consist of five field sessions providing students with a first-hand experience of painting outdoors. While discovering the varied challenges of painting the landscape and negotiating the urgency of working out-of-doors, we will explore the transformative power of giving our attention to the world around us. This plein air painting class can accommodate painters of different levels of experience, and will deal with a number of concerns specific to painting outdoors while also encouraging the development of individual interests. The class is open to both oil and acrylic disciplines.

ART-194 Watercolor Painting
3 credits, not offered every year
Beginning level study and practice course focused on individual exploration in technique and application of watercolor painting. Skill development in: preparation, creative expression, and presentation with the transparent medium of watercolor.

ART-195 Watercolor Painting, Intermediate
3 credits, not offered every year
An intermediate skill level course focused on individual exploration in technique and translucency of watercolor painting. Students continue to explore, through the application of skill development in: the preparation of compositions, creative expression, and public presentation with the medium of watercolor. Prerequisites: ART-194 or instructor consent.

ART-196 Watercolor: Inside/Outside
1 credit, not offered every year
A study and practice course developed to complement the individual's exploration of technique and application of watercolor painting. Skill development specific to prep and painting in natural and public environments.

ART-197 Gallery Design & Management
3 credits, Spring
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 Western Art
4 credits, Fall
Examines art, culture, and history from the Paleolithic era through the Byzantine style. This is a broad overview of art history that promotes an understanding of art and its history through readings, lectures, papers and exams. Students must be able to write brief research papers. Recommended: Pass WRD-098 or placement in WR-121.

ART-205 History of Western Art
4 credits, Winter
Examines art, culture, and history from the Medieval Era through the Renaissance. This is a broad overview of art history that promotes an understanding of art and its history through readings, lectures, papers and exams. Students must be able to write brief research papers. Recommended: Pass WRD-098 or placement in WR-121.

ART-206 History of Western Art
4 credits, Spring
Examines art, culture, and history from the Baroque period 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. Students must be able to write brief research papers. Recommended: Pass WRD-098 or placement in WR-121.

ART-221 Flash Animation: Design & Techniques
3 credits, Winter/Spring
Introduces the principles of animation using Adobe's Flash software. The course will emphasize design principles, analytical skills and creativity. Students will learn the basics of Flash in order to create successful animated projects.

ART-222 Advanced 2D Animation: Design & Techniques
3 credits, Spring
Covers advanced principles of animation using Adobe Flash and other software. The course will emphasize professional workflow and techniques of animation production for multimedia platforms.

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: Pass ART-115.

ART-226 Computer Graphics II
3 credits, Winter/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: Pass ART-225.

ART-227 Computer Graphics III
3 credits, Spring
Advanced use of multimedia applications 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: Pass ART-225 and ART-226.

ART-250 Ceramics/Beginning
4 credits, Fall
Broad general introduction to ceramics. Explore different methods of working with clay, including pinching, coiling, slab construction, and throwing on the wheel. Introduction to glazing and firing methods. Research into the ancient history of ceramics. Develop fundamental skills to foster artistic growth.

ART-251 Ceramics/Beginning
4 credits, Winter
Broad general introduction to ceramics. Explore different methods of working with clay, including pinching, coiling, slab construction, and throwing on the wheel. Introduction to glazing and firing methods. Research into the history of ceramics from the 10th to the 19th centuries. Develop fundamental skills to foster artistic growth.

ART-252 Ceramics/Beginning
4 credits, Spring
Broad general introduction to ceramics. Explore different methods of working with clay, including pinching, coiling, slab construction, and throwing on the wheel. Introduction to glazing and firing. Research ceramics from the early 20th century to the present. Develop fundamental skills to foster artistic growth.

ART-253 Ceramics/Intermediate
4 credits, Fall
Further develop skills and ideas to foster artistic growth. Explore working with clay: pinching, coiling, slab construction and throwing on the wheel. Continue to learn about glazing and firing. Research ancient history of ceramics.

ART-254 Ceramics/Intermediate
4 credits, Winter
Further develop skills and ideas to foster artistic growth. Explore working with clay: pinching, coiling, and slab construction and throwing on the wheel. Continue to learn about glazing and firing. Research ceramics from the 10th through 19th centuries.

ART-255 Ceramics/Intermediate
4 credits, Spring
Further develop skills and ideas to foster artistic growth. Explore working with clay: pinching, coiling, and slab construction and throwing on the wheel. Continue to learn about glazing and firing. Research ceramics from the early 20th century to the present.

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 Adobe Photoshop software. Required: Access to a digital camera with adjustable exposure controls.

ART-277 Welding: Metal Sculpture
2 credits, not offered every term
Examines basic issues of historical and contemporary visual art while providing practical hands-on experience in the craft and process of welding, metal fabricating, and casting. Emphasis will be placed on the development and completion of individual student projects which utilize the tools and processes of manipulating metal.

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. Corequisite: CWE-281 Required: Instructor consent.

ART-281 Painting/Beginning
4 credits, Fall
Introduces basic painting tools, materials, techniques, and elements of composition, color, gesture, and value. Projects will involve direct 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/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/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/Intermediate
4 credits, Fall
Utilizes advanced 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 it's relationship to volume and form on a two-dimensional plane. Assignments include paintings, readings and critique of projects. Prerequisite: ART-283 or instructor consent.

ART-285 Painting/Intermediate
4 credits, Winter
Utilizes advanced 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 it's relationship to volume and form on a two-dimensional plane. Assignments include paintings, readings, and critique of projects. Prerequisite: ART-283 or instructor consent.

ART-286 Painting/Intermediate
4 credits, Spring
Utilizes advanced painting concepts, materials and techniques with emphasis on composition, color, gesture and value. Projects will involve observational painting with a focus on landscape and it's relationship to volume and form on a two-dimensional plane. Assignments include painting, drawing, assigned readings and group critiques of painting projects. Prerequisite: ART-283 or instructor consent.

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
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 form in the history of sculpture will be examined.

ART-293 Sculpture
4 credits, Spring
Examines the processes and concepts of sculpture; the elements of form, space and visual communication will be examined with emphasis on current concerns. Clay, plaster, 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, Winter
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 and Sciences

See also General Science (GS).

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: Pass 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: Pass 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: Pass WRD-098 or placement in WR-121.

ASE

Courses with this prefix will not transfer to a four-year institution.

Adult High School Diploma

ASE-010 Basic Math
.5 high school credit
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 may need a slower-pace approach. Elective credit only for high school diploma requirement. Required: Instructor consent. May be repeated for up to 1.5 credits.

ASE-011 Applied Math I
.5 high school credit
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 up-to-date technology is integrated throughout the course. A scientific calculator is required. Required: Instructor consent.

ASE-012 Applied Math II
.5 high school credit
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: Instructor consent.

ASE-015 Basic English
.5 high school credit
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. Required: Instructor consent. May be repeated for up to 1.5 high school credits.

ASE-016 Intermediate English
.5 high school credit
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 credit. Required: Instructor consent

ASE-017 Advanced English
.5 high school credit
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: Instructor consent.

ASE-020 Literature I
.5 high school credit
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: Instructor consent.

ASE-021 Effective Study Skills
.5 high school credit
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: Instructor consent.

ASE-026 Health I
.5 high school credit
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: Instructor consent.

ASE-028 Global Studies I
.5 high school credit
Fall/Winter/Spring/Summer
Focuses on geographic factors that contribute to patterns of human settlement and economic development. Required: Instructor consent.

ASE-029 Global Studies II
.5 high school credit
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: Instructor consent.

ASE-032 US History I
.5 high school credit
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: Instructor consent.

ASE-033 US History II
.5 high school credit
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: Instructor consent.

ASE-034 Government I
.5 high school credit
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: Instructor consent.

ASE-035-Careers I
.5 high school credit
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: Instructor consent.

ASE-036 Personal Finance I
.5 high school credit
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: Instructor consent.

ASE-037 Basic Developmental Reading
.5 high school credit
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. Required: Instructor consent.

ASE-038 Intermediate Reading
.5 high school credit
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: Instructor consent.

ASE-039 Advanced Reading
.5 high school credit
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: Instructor consent.

ASE-041 AHSD Life Experience Assessment
.5 high school credit
Fall/Winter/Spring/Summer
Assists student in documenting actual life experiences, which are then assessed toward meeting credit requirements for an Adult High School Diploma. May be repeated up to 2 high school credits. Required: Instructor consent.

ASE-042 Job Skills Competency Lab
.5 high school credit
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. Can be repeated up to 2 high school credits. Required: Instructor consent.

ASE-046 Human Development
.5 high school credit
Fall/Winter/Spring/Summer
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. May be repeated up to 2 high school credits. Required: Instructor consent.

ASE-047 Physical Education I
.5 high school credit
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. Required: Instructor consent.

ASE-051 Introduction: Food Preparation/ Nutrition
.5 credit high school credit
Fall/Winter/Spring
Introduces students to food budgeting, shopping, nutrition, sanitation of food, and cooking techniques through classroom discussions, demonstrations, specific assignments and hands-on cooking and shopping experiences. May be repeated up to 2 high school credits. Required: Instructor consent.

ASE-054 American Civics II
.5 high school credit
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: Instructor consent.

ASE-056 Personal Finance II
.5 high school credit
Fall/Winter/Spring/Summer
Explores personal finance related to types of loans, debt, large purchases, taxes, insurance, investments, financial careers, and retirement. Corequisite: ASE-057. Required: Instructor consent.

ASE-057 Careers II
.5 high school credit
Fall/Winter/Spring/Summer
Explores the relationships between personal finance, workplace issues and personal choices. Presents skills to enter and advance in the workplace, promote healthy living patterns, and for personal planning. Basic technology skills are incorporated. Corequisite: ASE-056. Required: Instructor consent.

ASE-058 Physical Education II
.5 high school credit
Fall/Winter/Spring/Summer
Presents a broad perspective of physical fitness, encouraging students to pursue and maintain a health enhancing level of physical fitness. Identifies the basic principles of fitness development. Required: Instructor consent.

ASE-059 Health II
.5 high school credit
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 of effective communication skills needed at work and in the community. Required: Instructor consent.

ASE-061 General Science/Life Science
.5 high school credit,
Fall/Winter/Spring/Summer
Presents principles of habitat, habitat management and wildlife science in a hands-on environment. Explores concepts of endangered species and extinction, adaptations and natural selection, life cycles, food webs, habitat, and wildlife laws. Required: Instructor consent.

ASE-062 Physical Science/Winter Ecology
.5 high school credit,
Fall/Winter/Spring/Summer
Presents principles of winter ecology. Students explore animal, insect, human, and plant adaptations to life in cold wintry environments. Required: Instructor consent.

ASE-063 General Science/Wildlife
.5 high school credit,
Fall/Winter/Spring/Summer
Presents principles of the plant kingdom in a hands-on outdoor setting. Explores plant growth, function, adaptations, processes, and ecosystem within a partially developed urban watershed. Required: Instructor consent.

ASE-066 Word Processing/Spreadsheet Applications
.5 high school credit
Fall/Winter/Spring/Summer
Focuses on the use of technology in an educational setting, in the workplace, and in everyday life. Skills needed to operate and utilize a computer's hard drive and various software applications: Microsoft Word, Excel, Access and PowerPoint. Required: Instructor consent.

ASE-067 E-mail/Internet/Personal Applications
.5 high school credit
Fall/Winter/Spring/Summer
Focuses on the use of technology in an educational setting, in the workplace, and in everyday life. Skills needed to operate and utilize a computer hard drive and various software applications, electronic communication and use of the World Wide Web. Discusses issues and debates concerning technology in a global society. Required: Instructor consent.

ASE-068 Literature II
.5 high school credit
Fall/Winter/Spring/Summer
Focuses on literature from 1850-present. Methods of identifying, understanding, interpreting, analyzing, synthesizing, and critically evaluating elements and devices of literature are presented. Utilizes a variety of literary forms and genres. Required: Instructor consent.

ASE-071 Algebra I
.5 high school credit
Fall/Winter/Spring/Summer
Major topics (in an integrated approach) include the use of variables, multiplication in algebra, addition in algebra, and subtraction in algebra. Required: Instructor consent.

ASE-072 Algebra II
.5 high school credit
Fall/Winter/Spring/Summer
Major topics (in an integrated approach) include linear sentences, division in algebra, slopes and lines, exponents, quadratic equations, and linear systems. Required: Instructor consent.

ASE-086 General Science/Birds
.5 high school credit
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: Instructor consent.

ASE-087 Physical Science: Exploring The Nardoo
.5 high school credit
Fall/Winter/Spring/Summer
Using simulated river ecology, students investigate the chemical and physical changes the river has undergone as development of the river resources takes place. Interdependence in an ecosystem; collection and interpretation of data; and development are primary themes and issues. Required: Instructor consent.

ASL

American Sign Language

ASL-101 American Sign Language I
4 credits, Fall
First 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: Pass WRD-098 or placement in WR-121.

ASL-102 American Sign Language II
4 credits, Winter
Second 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. Prerequisite: Pass ASL-101 or instructor consent.

ASL-103 American Sign Language III
4 credits, Spring
Third 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. Prerequisite: Pass ASL-102 or instructor consent.

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 skills. Emphasizes active communication in sign language. Prerequisite: Pass ASL-103 or instructor consent.

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. Prerequisite: Pass ASL-201 or instructor consent.

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. Prerequisite: Pass ASL-202 or instructor consent.

BA

Business Administration

BA-101 Introduction to Business
4 credits, Fall/Winter/Spring/Summer
Introduces the American business system in a changing global environment. Disciplines covered include economics, entrepreneurship, formation, accounting, finance, marketing, and management. Recommended: Pass WRD-090 or placement in RD-115.

BA-103 Business Strategies for Computer Consultants
3 credits, Spring
Class introduces the procedures for establishing and developing a successful consulting business in computer-related services including web development, network support, and computer support.

BA-104 Business Math
3 credits, Fall/Winter
Business applications including mark-ups and mark-downs; statistical applications; simple interest; present value and future value of single sums and annuities; gains, losses and valuations of stocks, bonds, mutual funds, and other investments. Also included are accounting math applications of depreciation, inventory valuation, financial ratios and analysis. Prerequisite: Pass MTH-050 or place into higher level math class; or instructor consent.

BA-111 General Accounting I
4 credits, Fall/Winter/Spring
Full-cycle bookkeeping and payroll for service and merchandising businesses including coverage of subsidiary ledgers, journalizing, posting, preparing financial statements, and end-of-period adjustments for small businesses. Recommended: Pass WRD-090 or placement in RD-115.

BA-112 General Accounting II
4 credits, not offered every year
Financial recordkeeping topics include reporting standards; cash collections and controls; receivables and payables; inventory adjustments; and valuing property, plant and equipment, accounting for proprietorships. Also introduced are partnerships and corporate form of ownership. Prerequisite: Pass BA-111 or instructor consent.

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
3 credits, Fall
Foundational course in project management. Students gain a thorough grounding in project management principles and techniques, including project life cycle, chartering, stakeholder management, work/task breakdown, network diagram and critical path, contingency planning, resource allocation, and project monitoring, and reporting.

BA-122 Teamwork
3 credits, Fall
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.

BA-123 Leadership and Motivation
3 credits, Fall
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- and ethical-negotiation techniques. Students engage in one-on-one and team negotiation role plays and complete both pre- and post-negotiation analyses. Students also predict and then evaluate effective negotiations from the perspective of themselves and their peers.

BA-125 Advanced Project Management Tools
5 credits, Winter
Tools and processes employed in the project knowledge areas of project communication, risk, procurement, and quality. Major topics include project communication planning and preferred communication channels and approaches; risk assessment and risk management in a project environment; project procurement planning and management with an emphasis on contract types and contract awards and administration; and approaches to project quality planning, quality assurance, control and improvement. Prerequisite: Current enrollment in or successful completion of BA-120; or instructor consent.

BA-126 Project Management: Workshop
3 credits, Spring
In small teams, students manage a simulated project, managing schedule, 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 2010, in which the student is expected to have prior training. Prerequisites: Pass BA-120, BA-125 and BT-177 or instructor consent.

BA-130 Leadership in Literature
4 credits, not offered every year
Examines the nature of leadership by analyzing characters in major literary works. Recommended: Pass WRD-098 or placement in WR-121.

BA-131 Introduction to Business Computing
4 credits, Fall/Winter/Spring
Introductory course using Microsoft Word, Excel, Access, and PowerPoint applications to create business documents, utilize the Internet, and file management. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass BT-120 or instructor consent.

BA-146 Entertainment Law & New Media
3 credits, Spring
Covers the basic elements of copyright law and licensing as it applies to artists, songwriters, composers, filmmakers, and New Media Artists. Also covers how to protect your intellectual property and benefit from your rights as a copyright owner.

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: Pass WRD-090 or placement in RD-115.

BA-177 Payroll Accounting
3 credits, Winter
Basic personnel payroll records necessary in business firms, laws affecting payroll systems, procedures used in computing wages, salaries and deductions, and manual preparation of payroll records and reports. Prerequisite: Pass BA-111 or BA-211; or instructor consent.

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: Pass WRD-090 or placement in RD-115. Prerequisites: Pass BA-131 and WR-121, or instructor consent.

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 Recommended: Pass BA-251. Prerequisite: Pass WRD-090 or placement in RD-115; or instructor consent.

BA-208 Employee 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
Basic principles of accounting cycle for service and merchandising companies, journals, ledgers, accounting for cash, end-of-period operations, worksheets, entries, and financial statements. Emphasis on procedure and theory. Recommended: Pass WRD-090 or placement in RD-115 and pass BA-104.

BA-212 Financial Accounting II
4 credits, Fall/Winter/Spring/Summer
Principles and practices in service and merchandising corporations, cash controls, receivables, assets, short-term and long-term liabilities, debt, and financial statements. Corporate analysis of financial position including the cash flow statement. Prerequisite: Pass BA-211 or instructor consent.

BA-213 Decision Making with Accounting Information
4 credits, Fall/Winter/Spring/Summer
Accounting for manufacturing operations, cost systems, capital budgeting, variances and budget performance reports, job order, process, flow, and cost/volume profit analysis and standard costs. Presentation and interpretation of accounting data to aid decisions. Prerequisite: Pass BA-212 or instructor consent.

BA-214 Business Communication
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. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass BA-213 or instructor consent.

BA-217 Budgeting for Managers
3 credits, Spring
Focuses on developing and managing departmental and project budgets and on understanding how they fit into the overall organizational framework. Addresses fixed, flexible, and rolling budgets, break-even and contribution margin analysis, profit planning, manufacturing costs and sales forecasts, and cost behavior and variance analysis. Recommended: Pass BA-111 or BA-211 or have experience in accounting or work-related budgeting. Pass BA-131 or CS-135S and pass WRD-090 or placement in RD-115.

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. Prerequisite: Pass MTH-020 or higher, or pass BA-104; pass WRD-090 or placement in RD-115; or instructor consent.

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. Prerequisite: Pass BA-212 or instructor consent.

BA-223 Principles of Marketing
4 credits, Fall/Winter
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: Pass WRD-090 or placement in RD-115.

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: Pass WRD-090 or placement in RD-115.

BA-225 Business Report Writing
3 credits, not offered every year
Focuses on the skills and techniques required to write and produce professional business reports, including research, writing, formatting, editing, and presentation. Prerequisites: Pass WR-121 and pass BA-205, or instructor consent.

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: Pass WRD-090 or placement in RD-115.

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. Prerequisite: Pass BA-226 or instructor consent.

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. Prerequisite: Pass BA-111 or BA-211; or instructor consent.

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. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass BA-224 or instructor consent.

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 emphasizes face-to-face communication skills and relationship building. Recommended: Pass WRD-090 or placement in RD-115.

BA-239 Advertising
4 credits, Fall
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: Pass WRD-090 or placement in RD-115, BA-101.

BA-249 Retailing
3 credits, Fall/Spring
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. Prerequisite: Pass WRD-090 or placement in RD-115; or instructor consent.

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 financial accounting and cash-flow projections. Recommended: Pass WRD-090 or placement in RD-115.

BA-251 Supervisory Management
3 credits, Fall/Winter
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. Prerequisite: Pass WRD-090 or placement in RD-115; or instructor consent.

BA-254 Basic Compensation and 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 & Auditing
4 credits, Spring
Capstone course for students working towards the Accounting AAS Degree. The course will build upon knowledge obtained from the Principles of Accounting courses and introduce, from a user perspective, more advanced topics such as Fund and Governmental Accounting, Auditing, Fraud Examination, and current issues in Taxation. Prerequisite: BA-213 or instructor consent.

BA-256 Income Tax Accounting
3 credits, Fall
Detailed review of the federal tax structure as it relates to the preparation of individual tax returns. Also provides a brief overview of partnership and corporate tax returns. Recommended: Pass WRD-090 or placement in RD-115.

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: Pass WRD-090 or placement in RD-115.

BA-268 Applied Project Demonstration
3 credits, 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—along with a comprehensive exam—demonstrates knowledge acquired in prerequisite classes in the Project Management degree program.

BA-280 Business/CWE
3-6 credits,
Fall/Winter/Spring/Summer
Cooperative work experience. On-the-job experience in a business related to the student's major course of study. Under supervision of instructor and employer. May be repeated for up to 6 credits. Corequistes: CWE-281. Required: Instructor consent.

BA-281 Business/CWE
3-6 credits,
Fall/Winter/Spring/Summer
Cooperative work experience. On-the-job experience in a business related to the student's major course of study. Under supervision of instructor and employer. May be repeated for up to 6 credits. Corequisites: CWE-281. Required: Instructor consent.

BA-285 Human Relations in Business
4 credits, Fall/Winter/Spring/Summer
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: Pass WRD-090 or placement in RD-115.

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: Pass MTH-060 or MTH-098 or placement in MTH-065; pass WRD-090 or placement in RD-115; pass 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: Pass MTH-060 or MTH-098 or placement in MTH-065; pass WRD-090 or placement in RD-115; pass WRD-098 or placement in WR-121.

BI-103 General Biology; Plants and the Ecosystem
4 credits, Fall/Spring/Summer
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: Pass MTH-060 or MTH-098 or placement in MTH-065; pass WRD-090 or placement in RD-115; pass 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, cellular chemistry, cell structure and function, processes that affect the cell and its components, 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: Pass MTH-060 or MTH-098 or placement in MTH-065; pass WRD-090 or placement in RD-115; pass WRD-098 or placement in WR-121. Previous completion of CH-122 strongly recommended.

BI-120 Introduction to Human Anatomy & Physiology
4 credits, Fall
The laboratory course 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 required.

BI-160 Bird ID & Taxonomy
3 credits, not offered every term
Lecture course introducing bird anatomy, identification, classification, and behavior. Identification techniques applied to birds through lectures, slides and field trips to various locations in Eastern Oregon, the Willamette Valley, and the Oregon Coast.

BI-160L Bird ID & Taxonomy Lab
1 credit, not offered every term
Four weekend field trips. A lab to accompany the BI_160 Bird ID & Taxonomy lecture. Focuses on field identification of common Oregon birds by sight, sound, and habitat. Field trips required along with online research. Corequisite: BI-160.

BI-163 Malheur Field Trip
1 credit, Spring
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: Instructor consent.

BI-165C Natural History of the Oregon Coast
3 credits, not offered every term
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, tide pools, sand dunes, and coastal forests.

BI-165CL Natural History/Oregon Coast Lab
1 credit, not offered every term
A lab to accompany the BI-165C, Natural History of the Oregon Coast, lecture. Field trips and lab exercises focus on oceanography, plants, animals, geology, and environmental issues of the Oregon coast. Corequisite: BI-165C.

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. Recommended: One term of college-level science. Required: Instructor consent.

BI-165T Natural History of Tropical Ecosystems
4 credits, not offered every year
A field-based lab course studying plants, animals, ecology, geology, and environmental issues of tropical ecosystems. On-site study with varied locations. Required: Instructor consent.

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: Pass 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: Pass 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: Pass 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 quarter of a three-quarter sequence of a laboratory course for science majors and pre-professional students. It emphasizes cell 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. Recommended: Pass MTH-111 or placement in MTH-112; pass WRD-090 or placement in RD-115; pass WRD-098 or placement in WR-121. Corequisite: Current enrollment in or previous completion of CH-104 or CH-221.

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: Pass BI-211 or instructor consent. 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. Corequisite: Current enrollment in or previous completion of CH-105 or CH-222.

BI-231 Human Anatomy and 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: Pass BI-112 (preferred), or pass BI-101 and BI-102, or pass BU-211. Pass CH-112 (preferred), or pass CH-104 and CH-105, or pass CH-221 and CH-222; or instructor consent.

BI-232 Human Anatomy and 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. Prerequisite: Pass BI-231 with a C or better or instructor consent.

BI-233 Human Anatomy and 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. Prerequisite: Pass BI-232 with a C or better or instructor consent.

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: Pass BI-101, BI-112 or BI-211, and pass CH-104, CH-112 or CH-221; or instructor consent.

BT

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Business Technology

BT-101 Introduction to e-Learning
1 credit, not offered every term
This is an introductory course for students who are new to web-based, e-learning courses including courses which are web-assisted, hybrid, or full-online. The course will include e-learning fundamentals including the use of e-learning course management software, e-learning readiness and student success tips, support resources, technical requirements, and online research basics.

BT-110 Income Tax Preparation
8 credits, not offered every year
An introduction to individual income tax law and tax return preparation. Approved by the Oregon State Board of Tax Practitioners to prepare students to take the Oregon Licensed Tax Preparer's Exam. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass BA-111 or BA-211, or instructor consent.

BT-120 Personal Keyboarding
2 credits, Fall/Winter/Spring/Summer
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/Summer
Designed to improve typing proficiency using 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 Prerequisite: Pass BT-120 or instructor consent.

BT-124 Business Editing I
3 credits, Fall
Course builds communication skills through the study of correct usage of grammar, spelling, vocabulary usage, effective writing, and editing principles. Recommended: Pass WRD-090 or placement in RD-115.

BT-125 Business Editing II
3 credits, Winter
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. Prerequisite: Pass BT-124 with a C or better or instructor consent.

BT-160 Word I
3 credits, 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. Recommended: 35 words per minute typing skill. Prerequisite: Pass BT-120 or instructor consent.

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. Recommended: Pass BT-124 and 40 words per minute typing skill. Prerequisite: Pass BT-160 or instructor consent.

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. Prerequisite: Pass BT-120, or instructor consent.

BT-173 Introduction to Microsoft PowerPoint
2 credits, Spring
Fundamentals in learning the basics of presentation concepts including how to plan, develop, and give a presentation to present data and information using Microsoft's presentation graphics program. Prerequisite: BT-120, or instructor consent.

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.

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. Prerequisite: Pass BT-160 or instructor consent.

BT-262 Integrated Projects
4 credits, Fall
Advanced Microsoft Word skills in creating letters, reports, and forms; in creating Excel worksheet reports and budgets; in creating Access databases to generate reports and forms; in creating PowerPoint presentations, and in linking documents and saving as Web pages. Introduction to Acrobat forms and documents. Google applications such as Word, Excel, and PowerPoint, and Gmail. Prerequisite: Pass BT-161 with a C or better; or instructor consent.

BT-271 Advanced Business Projects
4 credits, Spring
Participate in dynamic business simulations that provide experience in working as team members in a professional environment. Practice using oral and written communications, analyzing information, problem solving, decision making, prioritizing, applying time management skills, and using industry standard technology tools. Prerequisites: BA-205, BA-228, BT-125, BT-216, BT-262, and CS-135S; or instructor consent.

CDT

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Drafting

For additional information contact the Manufacturing Department at 503-594-3318.

CDT-102 Sketching and 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
4 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: Completion of CDT-102.

CDT-108A Introduction to SolidWorks
3 credits, Summer/Winter
This course is an introduction to the SolidWorks parametric mechanical software. Students will design 3D solid parts, sheet metal parts and assemblies, and develop 2D documentation from them.

CDT-160 Revit Architecture
3 credits, not offered every term
Introduction to the basic principals in Revit building. From design to construction documents, students will create floor plans using walls, doors and windows; add furniture fixtures, curtain walls, floors, ceiling grids, and generate elevations, sections, details and schedules directly from the model.

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.

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. Prerequisites: CDT-108A or instructor consent.

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. Prerequisite: Pass MTH-065 or MTH-098 with a C or better or placement in MTH-095, pass WRD-090 or placement in RD-115; or instructor consent.

CH-105 Introductory Chemistry
5 credits, Winter/Spring/Summer
A laboratory course discussing heat; molecular and ionic interactions in solids, liquids, gases and solutions; chemical reactions including acid-base, electron transfer and equilibrium Prerequisite: Pass CH-104 or instructor consent.

CH-106 Introductory Chemistry
5 credits, Spring/Summer
A lab course discussing organic and biochemistry. Prerequisite: Pass CH-105 or instructor consent.

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, Anatomy and Physiology and/or BI-234, Introductory Microbiology. 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. Prerequisite: Pass MTH-065 or MTH-098 with a C or better or placement in MTH-095. Pass WRD-090 or placement in RD-115; or instructor consent. Recommended: BI-112 strongly recommended.

CH-114 Chemistry in Art
4 credits, Summer
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: Pass WRD-090 or placement in RD-115.

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. Prerequisite: Pass MTH-095 with a C or better or placement in MTH-111; or instructor consent.

CH-221 General Chemistry
5 credits, Fall/Winter
Transfer lab course for science, engineering, and professional majors. Cover 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: A year of high school chemistry or pass CH-150, or CH-104 and CH-105; pass MTH-095 with a C or better, or placement in MTH-105 or MTH-111; or instructor consent.

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. Prerequisite: Pass CH-221 or instructor consent.

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. Prerequisite: Pass CH-222 or instructor consent.

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. Prerequisite: Pass CH-223 or instructor consent.

CH-242 Organic Chemistry II
5 credits, Winter
Upon finishing this course with a grade of C or better, a student will be prepared to enroll in and successfully complete the second term of organic chemistry, CH-242. Course instruction encourages and the level of course difficulty is set to require a cooperative effort on the part of students in order to be successful. Prerequisite: Pass CH-241 or instructor consent.

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. Prerequisite: Pass CH-242 or instructor consent.

CIV

Courses with this prefix will not transfer to a four-year institution. Courses are intended for ESL students.

Citizenship

XCIV-0001 Citizenship Preparation
0 credit, not offered every term
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. Required: Instructor consent.

CJA

Criminal Justice

CJA-101 Criminology
3 credits, Fall
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
4 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 term
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 Judicial Process
3 credits, Winter
Studies the judicial processes 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
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. Prerequisite: Pass CJA-120 or instructor consent.

CJA-130 Introduction to Corrections
3 credits, Fall
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, Spring
Analyzes prisons, jails and other correctional institutions. Discusses punishment history and rationale. Identifies the functions of the custodial staff and describes institutional procedures: reception, classification, program assignment and release. Studies prison management systems and examines juvenile facilities.

CJA-137 Mass Murder and Serial Killers
3 credits, not offered every term
Explores the phenomenon of both mass murders and serial killings, and the impact each has both upon society and individual victims. Examines recent and historically notorious cases, while probing issues such as causation, social environmental linkage, and the mindset of offenders.

CJA-170 Introduction to Field Work in Criminal Justice
3 credits, Fall
Provides required preparation for participation in Criminal Justice/Corrections Cooperative Work Experience. Discusses the process of pursuing a career in the criminal justice system, including law enforcement, the practice of law, courts, corrections, and private security. Includes topics related to Cooperative Work Experience such as finding a field placement, interviewing, and creating learning objectives. Addresses hiring, promotions, and workplace ethics. Students must successfully complete this course before participating in Criminal Justice/CWE. Prerequisites: Pass CJA-110 with a C or better, or instructor consent.

CJA-200 Community Policing in a Culturally Diverse Society
4 credits, Spring
Examines interrelationships and role expectations of agencies and public policy. Provides information on how law enforcement professionals work effectively with diverse cultural groups. Explores racial and community tension, minority group crime, racial profiling, hate crimes, community policing, police misconduct and alternative lifestyles encountered in law enforcement.

CJA-201 Juvenile Delinquency
4 credits, Spring
Surveys the nature, extent, and causes of delinquent behavior. Studies the historical and contemporary perspectives on juvenile offenders. Describes laws, enforcement, court, and correctional procedures within the juvenile system, and explores the differences between adult and juvenile practices.

CJA-203 Crisis Intervention
3 credits, Winter
Examines crisis intervention as it applies to emergency service workers. Includes the psychodynamics of family crisis; alcohol/drug related problems; suicide; sexual assault victims; domestic violence; mentally disturbed individuals; neglected, battered, and abused children.

CJA-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 techniques for specific crimes.

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. Prerequisite: CJA-210 or instructor consent.

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. Prerequisite: CJA-211 or instructor consent.

CJA-213 Interview & Interrogation
3 credits, not offered every term
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, not offered every term
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.

CJA-215 Sexual Violence & the Justice System
3 credits, not offered every term
This course will explore various aspects of sexual violence in America, including discussion on societal and historical perspectives, victim trauma, sexual predators and community response to these crimes. Core strategies for victim and legal response are introduced.

CJA-222 Procedural Law
3 credits, Spring
Discusses the constitutional and statutory provisions related to arrest, search and seizure. Includes use of deadly force, admissions, interrogations, plain view limitations, law of stop and frisk, and officer testimony.

CJA-223 Criminal Justice Ethics
3 credits, Spring
Surveys common ethical frameworks and then examines ethical issues, questions, challenges and consequences facing criminal justice professionals, including law enforcement, corrections, the courts and others.

CJA-232 Corrections Casework
3 credits, Spring
Introduces interviewing and counseling techniques used by corrections officers and workers in one-on-one and group contacts with clients. Discusses how to supervise the alcoholic, drug addicted, sex offender, mentally ill, juvenile, elderly, and emotionally immature client. Explores a variety of case management materials, with an emphasis placed upon objective case planning and monitoring.

CJA-243 Drugs, Crime and the Law
3 credits, Winter
Examines the most common types of drugs consumed in society, effects of psychoactive substances, treatment and prevention models, laws and regulations, societal effects of drug policies, business of the illegal drug market, potential crimes associated with drugs, and law enforcement strategies used to address drug manufacturing, distribution and use.

CJA-250 Reporting, Recording and 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. Prerequisite: Pass WR-121 with a grade of C or better, or instructor consent.

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-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. Prerequisite: CJA-170. Corequisite: CWE-281. Required: Instructor consent.

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. Prerequisite: CJA-170. Corequisite: CWE-281. Required: Instructor consent.

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. May be repeated for up to 6 credits.

CLA

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Clinical Laboratory Assistant

CLA-100 Introduction to Healthcare
2 credits, Fall
An overview and introduction to healthcare 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 the theory of a clinical laboratory and clinical laboratory Assistant duties, including state and federal regulations, quality assurance practices, laboratory terminology, staffing, and a basic understanding of waived laboratory testing. The majority of the competencies required in the Core Module of NAACLS's Clinical Laboratory Assistant program will be covered. The role of the clinical laboratory in the health care setting will be addressed. Corequisite: CLA-101L. Required: Students must be admitted into the current CLA cohort, or instructor consent.

CLA-101L Clinical Laboratory Assistant Skills I Lab
1 credit, Fall

A companion course to CLA-101, presents the student with the skills required of a clinical laboratory assistant, which includes performance of waived laboratory testing and specimen processing within the boundaries of state and federal regulations and quality assurance practices, insuring a basic understanding of quality laboratory testing. Corequisite: CLA-101. Required: Students must be admitted into the current CLA cohort, or instructor consent.

CLA-102 Clinical Laboratory Assistant Skills II
3 credits, Winter

Addresses hematology and urinalysis theory with assistant level scope of practice. Correct specimen collection will be emphasized. Students will be required to define, assess, and evaluate various waived tests and explain the necessity of accuracy and attention to detail. They will also define and explain the use of controls, standards and laboratory protocols. Prerequisite: Pass CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, BI-120 or the equivalent. Corequisite: CLA-102L. Required: Students must be admitted into the current CLA cohort, or instructor consent.

CLA-102L Clinical Laboratory Assistant Skills II Lab
1 credit, Winter

This course, a companion to CLA-102 addresses hematology and urinalysis skills within assistant scope of practice. Correct specimen collection will be emphasized. Students will be required to perform various waived tests and demonstrate an understanding of the necessity of accuracy and attention to detail and will demonstrate and analyze the correct use of controls, standards and laboratory protocols. Prerequisite: Pass CLA-100, CLA-101, CLA-101L, CLA-118, CLA-118L, BI-120 or the equivalent. Corequisite: CLA-102. Required: Students must be admitted into the current CLA cohort, or instructor consent.

CLA-103 Clinical Laboratory Assistant Skills III
3 credits, Spring

This course emphasizes Microbiology, Clinical Chemistry and Serology/Immunology theory with regards to laboratory assistant scope of practice and professionalism in the workplace. The course will review controls, standards and laboratory regulation. Prerequisite: Pass CLA-100, CLA-101, CLA-101L, CLA-102, CLA-102L, CLA-118, CLA-118L, BI-120 or the equivalent. Corequisite: CLA-103L. Required: Students must be admitted into the current CLA cohort, or instructor consent.

CLA-103L Clinical Laboratory Assistant Skills III Lab
1 credit, Spring

This course, a companion to CLA-103, is a skills lab that emphasizes Microbiology, Clinical Chemistry, and Serology/Immunology. Attention to detail and accuracy will be discussed. The student will demonstrate the correct use of controls, standards and laboratory protocols. Prerequisite: Pass CLA-100, CLA-101, CLA-101L, CLA-102, CLA-102L, CLA-118, CLA-118L, BI-120 or the equivalent. Corequisite: CLA-103. Required: Students must be admitted into the current CLA cohort, or instructor consent.

CLA-115 Laboratory Administrative Skills
2 credits, Winter

Designed for the laboratory assistant employed in a physician's office laboratory, instructing them in laboratory coding, billing practices, and other administrative duties, with emphasis on patient test management and professionalism. EKG techniques will be included as well as other back office skills, as required by NAACLS. Required: Instructor consent.

CLA-118 Phlebotomy for Clinical Laboratory Assistants
1 credit, Fall

This course is designed to instill a broad understanding of blood collection and specimen handling theory used in the clinical laboratory and to prepare students to perform these tasks safely and effectively in the workplace. Universal and standard precautions and Federal and State Regulations will be emphasized. Customer satisfaction, professionalism, quality control and ethical issues will be addressed. Corequisite: CLA-118L. Required: Students must be admitted into the current CLA cohort, or instructor consent.

CLA-118L Phlebotomy for Clinical Laboratory Assistants Lab
1 credit, Fall

This course is a companion course to CLA-118, is designed for the Clinical Lab Assistant student practice and gain skill and experience in blood collection according to standard operating procedures. They 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. Corequisite: CLA-118. Required: Students must be admitted into the current CLA cohort, or instructor consent.

CLA-119 Phlebotomy/Laboratory/ Practicum I
3 credits, Winter

Students will participate in supervised, unpaid assignment, in area medical center laboratories to gain practical experience known as the clinical practicum. A weekly seminar accompanies this course. Required: Instructor consent.

CLA-120 Phlebotomy/Laboratory/ Practicum II
4 credits, Spring

Students will participate in a supervised, unpaid assignment, known as a clinical practicum in area medical center laboratories to gain practical experience. A weekly seminar accompanies this course. Prerequisite: Pass CLA-119. Required: Students must be admitted into the current CLA cohort, or instructor consent.

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: Students must be admitted into the current CLA cohort, or instructor consent.

CLA-130 Specimen Collection
1 credit, Winter
Designed to qualify students to perform drug testing collections under U.S. Department of Transportation (DOT) regulations. The final examination will include a demonstration of collection proficiency. Specimen management, adulteration and quality assessment will be addressed. Recommended: Breath Alcohol Technician (BAT) certification. Required: Students must be enrolled in current CLA cohort, or instructor consent.

COMM
Communication Studies

COMM-100 Basic Speech Communication
3 credits, Fall/Winter/Spring/Summer
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: Pass WRD-090 or placement in RD-115; pass WRD-098 or placement in WR-121; or instructor consent.

COMM-112 Persuasive Speaking
4 credits, not offered every year
Persuasive speaking, audience analysis, study of reasoning and the basic theories of persuasion. Prerequisites: Pass WRD-098 or placement in WR-121; or instructor consent.

COMM-126 Communication Between the Sexes
4 credits, Fall/Winter
Examines ways women and men are different and similar in their communication behaviors. Traditions, myths, social roles and current issues are discussed. Recommended: Pass WRD-090 or placement in RD-115; pass WRD-098 or placement in WR-121.

COMM-140 Introduction to Intercultural Communication
4 credits, not offered every term
Explores the impact cultural differences have on the communication process; increases awareness of students' own cultural behaviors. Students discover effective ways to deal with difficult situations when a cultural difference causes a problem. Recommended: Pass WRD-098 or placement in WR-121. 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.

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, newspapers, 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: Pass WRD-098 or placement in WR-121.

COMM-218 Interpersonal Communication
4 credits, Fall/Winter/Spring
The interpersonal communication process is examined through lectures, reading, and exercises. Subjects include goal-setting, first impressions, conflict resolution, non-verbal messages, self-concepts and assertiveness. Recommended: Pass WRD-098 or placement in WR-121.

COMM-219 Small Group Communication
4 credits, Winter
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: Pass WRD-098 or placement in WR-121.

COMM-227 Non-Verbal Communication
4 credits, not offered every term
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: Pass WRD-098 or 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. Corequisite: CWE-281. Required: Instructor consent.

CS
Computer Science

CS-090 Fundamental Computer Skills I
2 credits, Fall/Winter/Spring/Summer
The course covers the basic use of computers running the Windows 7 operating system, including: using the mouse and keyboard, creating and editing documents, file management, and basic Internet use.

CS-091 Fundamental Computer Skills II
2 credits, Fall/Winter/Spring/Summer
Continued development of skills learned in CS-090. Topics include intermediate features of the Microsoft Windows 7 operating systems, more work with applications (word processing using the latest version of Microsoft Word, spreadsheets using the latest version of Microsoft Excel, and presentations using the latest version of PowerPoint). Takes place in the computer lab, one student to a computer. Prerequisite: Pass CS-090 or placement in CS-091.

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. Prerequisites: Pass CS-090 or placement in CS-120; pass WRD-098 or placement in WR-121.

CS-121 Computer Applications
3 credits, not offered every term
Continuation of CS-120. Hands-on approach to word processing, database management, and electronic spreadsheets. Microsoft Office Suite (Word, Excel, Access, and PowerPoint.) Prerequisites: Pass CS-120 or placement in CS-121; pass MTH-060 or placement in MTH-065.

CS-125H HTML & Web Site Design
3 credits, Fall/Winter/Spring/Summer
Hands-on approach to planning, design, and developing published web sites using HTML tags in a text editor. The class focuses on basic HTML coding using HTML 5 models. Hyperlinks, images, cascading style sheets, forms, accessibility and design principles will be covered, as well as tools such as site management, validators, and page editors. Recommended: Pass CS-120 or equivalent experience.

CS-125R Podcasting
3 credits, not offered every year
Introduces audio and video recording and editing for the purposes of podcasting. Writing XML scripts. Includes hands-on projects and exercises.

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. Recommended: Pass MTH-060 or placement in MTH-065. Prerequisites: Pass CS-125H and MTH-065 or equivalent experience; or instructor consent.

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. Recommended: Pass MTH-060 or placement in MTH-065. Prerequisites: Pass BA-131 or CS-120; or instructor consent.

CS-135DB Microsoft Access
3 credits, Fall/Spring
Focuses on the advanced database capabilities using the latest 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. Recommended: Pass BA-131 or CS-120.

CS-135I Advanced Web Design with Dreamweaver
3 credits, Fall/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, scripts, and multimedia to realize site goals. Emphasizes professional design techniques. Prerequisite: Pass CS-125H or instructor consent.

CS-135S Microsoft Excel
3 credits, Fall/Winter/Spring
Focuses on advanced spreadsheet capabilities using the latest 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. Recommended: Pass CS-120 or BA-131; pass MTH-060 or placement in MTH-065.

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. Recommended: Pass BA-131 or CS-120.

CS-140 Introduction to Operating Systems
4 credits, Fall/Spring
Introduction to the theory behind operating systems as well as basic functions of Windows, Linux/UNIX and Macintosh operating systems. Discussion of operating system interface with input, output, and storage devices and basic network theory. Prerequisites: Pass CS-120 or placement in CS-121; pass MTH-060 or placement in MTH-065; pass WRD-098 or placement in WR-121; or instructor consent.

CS-150 Computer Technician Orientation
3 credits, Fall/Spring
Examines foundational computing subjects used in Computer Science and Information Technology. Topics include computer architecture, electronic logic, data representation, and programming, which are used in successive Computer Science courses. Information about degrees in Computer Science and Information Technology are also covered. Recommended: pass MTH-060 or placement in MTH-065. Prerequisites: Pass CS-120 or placement in CS-121; pass WRD-098 or placement in WR-121; or instructor consent.

CS-161 Computer Science I
4 credits, Fall
Disciplined approach to algorithm development, problem-solving methods, program design, data types, control structures, and subprograms. Uses C++. Prerequisites: Pass CS-120 or placement in CS-121; pass MTH-111 or placement in MTH-112, or 4 years high school math; or instructor consent.

CS-162 Computer Science II
4 credits, Winter
Effective methods of designing large programs. Elementary and dynamic data structures, data abstraction, object oriented programming, program correctness, verification, and testing. Requires a substantial project. Prerequisite: Pass CS-161 or instructor consent.

CS-179 Networking I
3 credits, Winter
Introductory course in computer networking. Covers data communication basics, network models, cabling, Ethernet, remote connectivity, basic TCP/IP operation and configuration, wireless networking, and basic network security. This course, in conjunction with CS-229, covers the topics on the CompTIA Network+ exam. Prerequisite: Pass CS-150 or instructor consent.

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. Prerequisite: Pass CS-125H or equivalent experience; or instructor consent.

CS-195 Flash Web Development
3 credits, Winter
Introduces the technologies and techniques behind creating an interactive, media-rich website using Adobe Flash. Topics include, but are not limited to, using the drawing tools, using the timeline, creating frame-based and tween-based animations, adding interactivity through ActionScript, and incorporating existing graphics, sound, and video files. Students will complete a portfolio of Flash creations throughout the class. Prerequisite: Pass CS-125H or equivalent experience; or instructor consent.

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.. Prerequisite: Pass CS-162 or instructor consent.

CS-202 Program Structures
3 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. Prerequisite: CS-162 or instructor consent.

CS-225 Computer End User Support
3 credits, Fall
Addresses professional and interpersonal skills needed by technicians who support and manage hardware and software information systems. Customer service skills; troubleshooting; help-desk operation; product needs analysis, evaluation, purchase, and installation; technical documentation and training. Prerequisites: Pass CS-120 or placement in CS-121 or equivalent experience; or instructor consent.

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. Prerequisite: Pass CS-140 or instructor consent.

CS-228 Computer OS Maintenance & Repair
4 credits, Winter
An in-depth course in Windows operating system maintenance and repair. Covers installation, configuration, maintenance, and troubleshooting of Windows. Includes troubleshooting the boot process, application and system issues, and using various backup and restore utilities and processes. This course, in conjunction with CS-227, covers the topics on the CompTIA A+ certification exam. Prerequisite: Pass CS-227 or instructor consent.

CS-229 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-179, covers the topics of the CompTIA Network+ exam. Prerequisites: Pass CS-179 and CS-228 or instructor consent.

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. Prerequisite: Pass CS-133S or previous HTML and programming experience; or instructor consent.

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. Prerequisite: Pass CS-125H or equivalent experience; or instructor consent. Recommended: Pass CS-275.

CS-240L Linux Administration
4 credits, Spring
Hands-on system administration of Linux. Installation, system configuration, file management, user and group account management, disk formatting and partitioning, local file systems, system startup and shutdown, text editing, run levels, backup and restore, printing, basic local area networking, and memory management. Prerequisite: Pass CS-140 or instructor consent.

CS-240M MacOS Administration
3 credits, Winter
Designed to prepare students for the challenges they will face as a networking professional supporting multiple operating systems. Lectures, projects and exercises reinforce skills as they are learned. Specific topic coverage includes: installation and setup, user accounts, file systems, data management, applications, network configuration, network services, peripherals, startup and troubleshooting. Prerequisite: Pass CS-140 or instructor consent.

CS-240W Windows Desktop Administration
3 credits, Winter
An introduction to the current Windows desktop client 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. Prerequisite: Pass CS-140 or instructor consent.

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. Prerequisite: MTH-251 or instructor consent.

CS-251 Discrete Structures II
4 credit, 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. Prerequisite: CS-250 or instructor consent.

CS-260 Data Structures
4 credit, Spring
Continuation of CS-162. Includes linear, linked lists, trees, abstract data types, searching and sorting algorithms, and their analysis. Prerequisite: CS-162 or instructor consent.

CS-275 Database Design
3 credits, Winter
Focuses on design of a relational database management systems (RDMS). Topics will include database development using the a) requirement, b) design, c) implementation model, database theory from flat table design to relational systems, entity-relationship models, one-to-one, one-to-many, and many-to-many relationships, referential integrity, normalization of tables, database programming and querying with SQL, and database security. Although other platforms may be demonstrated, the majority of work will be done with MySQL Server. Prerequisites: Pass CS-120 or placement above CS-120 or equivalent experience; or instructor consent. Required: 100GB or larger USB hard drive.

CS-276 Advanced SQL
4 credits, not offered every year
Focuses on design, development and implementation of SQL programming for all types of relational database applications including client/server and Internet databases. Learn to write complicated interactive and embedded SQL statements and learn the implications of multi-user database applications. Recommended: Two terms of programming language sequencing. Prerequisite: CS-275 or instructor consent

CS-279W Windows Server Administration
4 credits, Spring
Managing a Microsoft Windows server network. Topics include: Network protocols, Active Directory, performance issues, managing web resources, security, and disaster recovery. Prerequisites: Pass CS-179 and CS-240W; or instructor consent.

CS-280 Computer Science/CWE
3-6 credits
Fall/Winter/Spring/Summer
Cooperative work experience provides supervised work experience to supplement the school experience from the academic classroom environment. Examples would be providing user support, work with computer applications or programming languages, install or manage PC computer systems, and developing websites. Can be repeated for up to 9 credits. Prerequisites: Pass CS-140 and CS-150. Corequisite: CWE-281. Required: Instructor consent.

CS-284 Network Security
3 credits, Winter
Comprehensive overview of network security. Covers communication security, infrastructure security, cryptography, operations/organizational security, disaster recovery, business continuity and computer forensics. Prerequisite: Pass CS-279W or instructor consent.

CS-288W Windows Network Administration
4 credits, Winter
Practices network administration and design using Microsoft Windows Server and other operating systems. Topics include TCP/IP protocols and services such as IPv4 and IPv6 addressing, routing, filtering, network protection, and remote access. Prerequisite: Pass CS-279W or instructor consent.

CS-289 Web Server Administration
4 credits, Spring
An introduction to Apache and Microsoft Internet Information Server. Covers installation, administration, security, and troubleshooting, as well as the http, https, and ftp protocols. Prerequisites: Pass CS-240L and CS-240W; or instructor consent.

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: Pass CS-195 and CS-133S; or pass CS-195 and CS-135I, or instructor consent.

CWE

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Cooperative Work Experience

CWE-181 Cooperative Work Experience Preparation
1 credit, Fall/Winter/Spring/Summer
Develop skills and documents to assist students in preparing for CWE learning. Includes using on-line career development tools, cover letters, portfolio documents, informational interviewing, and interacting with HR offices.

CWE-281 Cooperative Work Experience Seminar I
0 credit, 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. Corequisite: Program specific CWE courses.

Discipline-Specific Cooperative Work Experience Classes:

Accounting BA-280
Anthropology ANT-280
Art ART-280
Auto Body Refinishing ABR-180
Auto Collision Repair/Refinishing AB-280
Auto Mechanics AM-280
Biology BI-280
Business Administration BA-280
Business Management BA-280
Business/Accounting & Accounting Clerk BA-280
Business/Marketing BA-280
Business/Administrative Office Professional/ Administrative Office Assistant BA-280
Career Development Internship HD-180
Computer & Network Administration CS-280
Computer Science CS-280
Corrections CJA-280
Criminal Justice/Corrections CJA-280/281
Digital Multimedia Communications DMC-180/DMC-280
Early Childhood Education ECE-280/HDF-280
Education ED-280
Electronic Publishing BA-280
Electronics Engineering Technology SM-280
Employment Skills Training EST-180
English ENG-280
Fire Science FRP-180/280
Geology G-280
Geography GEO-280
Gerontology GRN-280
GIS (Geographic Information Systems) GIS-280/281
Health HE-280
History HST-280
Horticulture/Arboriculture HOR-262/263/264
Horticulture/Landscape HOR-280/281/282
Horticulture/Organic Farming HOR-284/285
Human Resource Management BA-280
Human Services/Generalist I HS-280
Human Services/Generalist II HS-281
Human Services/Generalist III HS-282
Journalism/Public Relations J-280/J-280A
Juvenile Corrections CJA-280
Landscape HOR-280/281/282
Manufacturing MFG-280
Marketing BA-280
Mathematics MTH-280
Microelectronics Systems Technology SM-280
Music Technology MUS-280
Music MUS-280
Occupational Skills Training OST-180
Organic Farming HOR-285
Organic Farming (campus farm) HOR-284
Paraeducator ED-280
Physical Education PE-280
Political Science PS-280
Professional Truck Driver TTL-180
Project Management BA-280
Psychology PSY-280
Religion R-280
Renewable Energy Technology RET-280
Retail Management BA-280
Sociology SOC-280
Spanish SPN-280
Speech COMM-280
Theatre Arts TA-280
Tutoring HD-280
Water & Environmental Technology WET-180/280
Web Design CS-280
Welding Technology WLD-280
Zoology Z-280

DA

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Dental Assistant

DA-101 Dental Radiology I
2 credits, Fall
Introduction to history and principles of dental radiology, terminology, basic physics associated with x-rays, biological effects of x-rays, anatomical landmarks, and infection control. Corequisite: DA-101L. Required: Admission into the Dental Assistant program and instructor consent.

DA-101L Dental Radiology I Lab
1 credit, Fall
Practical instruction in radiation health and safety, types of film, film holders, processing and mounting of dental films, use of x-ray equipment, infection control techniques, disposal of hazardous waste, and exposure techniques on x-ray manikins. Corequisite: DA-101. Required: Admission into the Dental Assistant program and instructor consent.

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. Prerequisite: Pass DA-101 with a C or better. Corequisite: DA-102L. Required: Admission into the Dental Assistant program and instructor consent.

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. Prerequisite: Pass DA-101 with C or better. Corequisite: DA-102. Required: Admission into the Dental Assistant program and instructor consent.

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. Corequisite: DA-104L. Required: Admission into the Dental Assistant program and instructor consent.

DA-104L Clinical Procedures I Lab
1 credit, Fall
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. Corequisite: DA-104. Required: Admission into the Dental Assistant program and instructor consent.

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. Prerequisite: Pass DA-104 with a C or better. Corequisite: DA-105L. Required: Admission into the Dental Assistant program and instructor consent.

DA-105L Clinical Procedures II Lab
1 credit, Winter
Furthers 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. Prerequisite: Pass DA-104L with a C or better. Co-requisite: DA-105. Required: Admission into the Dental Assistant program and instructor consent.

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. Prerequisite: Pass DA-105 with a C or better. Corequisite: DA-106L. Required: Admission into the Dental Assistant program and instructor consent.

DA-106L Clinical Procedures III Lab
1 credit, Spring
Advanced and Expanded dental assisting procedures in dental specialties are taught. 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 amalgam and composite polishing will be taught on dental mannequins. Prerequisite: DA-105L with a C or better. Corequisite: DA-106. Required: Admission into the Dental Assistant program and instructor consent.

DA-107 Dental Materials I
2 credits, Fall
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. Prerequisite: Pass DA-106 with a C or better. Corequisite: DA-107L. Required: Admission into the Dental Assistant program and instructor consent.

DA-107L Dental Materials I Lab
1 credit, Fall
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. The identification and application of dental cements used in general dentistry will also be covered. OSHA and HAZ-COM guidelines are practiced as students manipulate and dispose of dental materials. Prerequisite: Pass DA-106L with a C or better. Corequisite: DA-107. Required: Admission into the Dental Assistant program and instructor consent.

DA-108 Dental Materials II
2 credits, Winter
An in-depth knowledge of the properties, uses and manipulation of impression materials, gypsum products and waxes will be covered. 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 rational for polishing removable appliances. An overview of dental implants will also be covered. Prerequisite: Pass DA-107 with a C or better. Corequisite: DA-108L. Required: Admission into the Dental Assistant program and instructor consent.

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 custom trays, bleaching trays, and provisional restorations will be taught. The instrumentation and procedures for fixed and removable prosthodontics will also be covered. Prerequisite: Pass DA-107L with C or better. Corequisite: DA-108. Required: Admission into the Dental Assistant program and instructor consent.

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. All OSHA and HAZ-COM protocols are followed to allow for student and patient safety and protection. A minimum of eight supervised unpaid hours per week is required for term one practicum. Students will participate in two seminars held during the term. Required: Admission into the Dental Assistant program and instructor consent.

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: Admission into the Dental Assistant program and instructor consent.

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. Prerequisite: Pass DA 110 with a C or better. Required: Admission into the Dental Assistant program and instructor consent.

DA-125 Dental Infection Control
2 credits, Fall
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 blood-borne pathogens standards and Hazard Communication will be taught and integrated throughout the didactic, preclinical, laboratory and clinical course of study. Required: Admission into the Dental Assistant program and instructor consent.

DA-130 Clinical Practicum III
8 credits, Spring
Clinical practicum hours are increased to allow for advancement and completion of clinical competencies. Supervised unpaid 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, at 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 three seminars during the term. Radiological proficiency examination will be administered in the first two weeks of this course. Prerequisite: Pass DA-120 with a C or better. Required: Admission into the Dental Assistant program. Students are to make prior arrangements with instructor to take their exam at CCC's dental lab. Instructor consent.

DA-135 Pharmacology/Medical Emergencies
2 credits, Spring
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: Admission into the Dental Assistant program and instructor consent.

DA-145 Dental Office Procedures
2 credits, Spring
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: Admission into the Dental Assistant program and instructor consent.

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 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 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.

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. Recommended: Previous experience with computer graphics and digital video. Students will learn the basics of After Effects to create successful motion graphics projects. Recommended: ART-221, ART-225, ART-226, and DMC-104.

DMC-107 Animation & Motion Graphics II
3 credits, Winter/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 aspects of After Effects to create successful motion graphics projects. Previous experience with computer graphics and digital video is recommended. Recommended: ART-221, ART-225, ART-226, and DMC-104. Prerequisite: ART-106 or DMC-106; or instructor consent.

DMC-108 Animation & Motion Graphics III
3 credits, Spring
Continuation of the process of animation and motion graphics design. This project-based course will explore advanced aspects of experimental and new technological approaches to creating digital effects and animation for video and web-based applications. Previous experience with computer graphics and digital video is recommended. Students will learn advanced aspects of After Effects to create successful motion graphics projects. Recommended: ART-221, ART-225, ART-226, and DMC-104. Prerequisite: ART-107 or DMC-107; or instructor consent.

DMC-109 Introduction to Stop Motion Animation
1 credit, Spring
Introduces basic stop motion animation tools, materials, techniques and elements of storyboarding, scripting, narrative development, compositing, special effect 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, Adobe After Effects and Photoshop, and Dragonframe stop motion. Recommended: DMC-106, ART-225.

DMC-111 Introduction to Video Game Design
3 credits, not offered every term
This course provides students with the skills to integrate 3D assets and Motion Capture sessions into a Unity-driven game design environment. It will focus on game development skills and the processes required in today's interactive game design industry. From preproduction to game mechanics and design to production, students will utilize Unity game development tools to create powerful games and interactive Augmented Reality projects.

DMC-132 Introduction to 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 3Ds Max along with techniques and pipeline familiarity in video art production. These skills will be usable in conjunction with motion capture animations. Students will also the importance of deadlines, file management and organization. Recommended: Take DMC-250, DMC-104, ART-107 or DMC-107. Prerequisites: ART-106 or DMC-106, or instructor consent.

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-170 Introduction to VFX Compositing
3 credits, not offered every term
This course is a progression from layer-based After Effects into node-based compositing. It will explore basic color theory and introduce the various techniques used in digital compositing. Students will be required to design and complete a series of projects applying to basic rotoscoping, paint and keying techniques, using various rendering formats. Ultimately this course will explore "matchmoving concepts" and CG + Live Action integration. Recommended: ART-104 or DMC-104, ART-107 or DMC-107, DMC-250. Prerequisites: ART-106 or DMC-106 or instructor consent.

DMC-190 Digital Media Communications Portfolio Project I
1-4 credits, not offered every term
Provides students the opportunity to combine their skills, knowledge, and special interests in the planning, production, and presentation of an original finished product representative of any one of the focus areas included in the Digital Multimedia Communications Program.

DMC-191 Digital Media Communications Portfolio Project II
3 credits, Fall/Winter/Spring/Summer
Provides students the opportunity to combine their skills, knowledge, and special interests in the revision, refinement, and further development of an original finished product representative of any one of the focus areas included in the Digital Multimedia Communications Program, and to collaborate with peers in the process of integrating their work with one additional DMC focus area. Prerequisite: Pass DMC-190 or instructor consent.

DMC-192 Digital Media Communications Portfolio Project III
4 credits, Fall/Winter/Spring/Summer
Provides students the opportunity to combine their skills, knowledge, and special interests in the production and production management of an original portfolio project that reflects full integration of DMC focus areas. Prerequisite: Pass DMC-191 or instructor consent.

DMC-194 Introduction to Film
4 credits, Fall
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: Pass 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 viewed as a visual language and an evolving art form that expresses and influences American culture. Recommended: Pass WRD-098 or placement in WR-121.

DMC-205 Directing for Film & Video
4 credits, Fall
Offers students interested in filmmaking the skills needed to successfully direct performances specifically for the screen. Lab component included. Prerequisite: Pass WR-121, or instructor consent.

DMC-221 Flash Animation: Design & Techniques
3 credits, Winter/Spring
Introduces the principles of animation using Adobe's Flash software. The course will emphasize design principles, analytical skills and creativity. Students will learn the basics of Flash in order to create successful animated projects. Prerequisites: Pass CS-195 or ART-225, equivalent experience, or instructor consent.

DMC-222 Advanced 2D Animation: Design & Techniques
3 credits, Spring
Covers advanced principles of animation using Adobe Flash and other software. The course will emphasize professional workflow and techniques of animation production for multimedia platforms. Prerequisites: Pass ART-221, equivalent experience, or instructor consent.

DMC-230 Documentary & Experimental Filmmaking
4 credits, not offered every year
Introduces the concepts and fundamentals of documentary and experimental filmmaking. This lecture/studio course will explore traditional and new technological approaches to creating digital documentaries and avant-garde film. Lab component included. Recommended: Pass WRD-098 or placement in WR-121; pass DMC-104 or previous experience with film studies and digital video.

DMC-242 Field Recording & Sound Design 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. Corequisite: DMC-265.

DMC-247 Sound for Film/Video Production
3 credits, Fall
Introduction to sound as related to moviemaking. Students will have the opportunity to create and assemble sound for video into a finished product. Explores the basic components of commercial film/video production as they relate to sound.

DMC-250 Motion Capture Animation
4 credits, not offered every term
Introduction to the fundamentals of motion capture animation for video game development and VFX. This project-based course will prepare students to work in the field of motion capture. Students will plan and direct sessions as well as process data for maximum efficiency. Through this process students will learn how to create professional level, 3D-based motion capture driven projects that can be used in video game development and film. Students will learn the basics of Motion Builder to create successful motion capture projects. Recommended: Previous experience with motion graphics and 3D animation. DMC-205, DMC-104, DMC-107 or ART-107. Prerequisites: ART-106 or DMC-106, or instructor consent.

DMC-264 Digital Filmmaking
4 credits, Winter
Explores the process of translating a written script into a digital film via pre-production, shooting, and post-video production. Recommended: Pass WRD-098 or placement in WR-121.

DMC-265 Advanced Digital Filmmaking
4 credits, Spring
This course applies filmmaking skills to the production of a short film from a written script. Lab component included. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass DMC-264 or instructor consent.

DMC-280 Digital Media Communications/ CWE
2-6 credits
Fall/Winter/Spring/Summer
Cooperative work experience. Provides students with on-the-job work experience in the field of media studies. Corequisite: CWE-281. Required: Instructor consent.

DMC-295 Revolutionary Film
4 credits, not offered every year
Focuses on revolutionary styles of filmmaking from around the world that continue to have an effect on how movies are made today. Recommended: Pass WRD-098 or placement in WR-121.

DMC-296 Adaption: Literature into Film
4 credits, not offered every year
Explores the art of transforming literary text into films. Focuses on various literary genres such as the novel, the short story, the play, and the nonfiction event, and analyzes the process of adapting these stories. Recommended: Pass WRD-098 or placement in WR-121.

EC

Economics

EC-200 Introduction to Economics
4 credits, Fall/Winter/Spring
General introduction to microeconomics as applied to individual decision-making units 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: Pass WRD-090 or placement in RD-115.

EC-201 Principles of Economics: MICRO
4 credits, Fall/Winter/Spring/Summer
Focuses on micro-economic theory dealing with the behavior of individuals and individual firms within different market structures. Covers concepts of competition, consumer decisions, the use price of economic resources, and international trade. Prerequisites: Pass MTH-020 or placement in MTH-098; previous completion or current enrollment in WRD-098 or placement in RD-115; or instructor consent. 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 macroeconomic theory, scarcity, production, money, unemployment, inflation, and international finance. Prerequisites: Pass MTH-020 or placement in MTH-098; previous completion or current enrollment in WRD-098 or placement in RD-115; or instructor consent. Recommended: Sequence of EC-201 and EC-202 taken in order.

ECE

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Early Childhood Education

ECE-121 Observation & 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-135 Self-Esteem in the ECE Classroom
1 credit, not offered every term
Focuses on the feelings of love, self-worth, trust, competency, and even power that begin to form long before the child has the capacity to express them in words. Emphasis is on understanding the importance of facilitating children's feelings of self-esteem, while focusing on the nurturing needs of the children.

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 & 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 on Pre-K as well as strategies for children as they prepare for kindergarten.

ECE-144 Working with the Gifted 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-145 Understanding Superhero Play in the Classroom
1 credit, not offered every term
Develops an understanding of superhero play in the development of young children and explores the role of adults in supporting and guiding their dramatic play. Emphasis will include how adults show children to use power wisely, understand the difference between real violence and pretend violence, settle conflicts without hurting anyone and act with compassion when others need help.

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. Prerequisite: Pass ECE-240 or instructor consent.

ECE-179 The Professional in Early Childhood Education & 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 working on their Child Development Associate (CDA) credential will receive guidance on compiling the resource file, while students pursuing their ECE AAS will receive information and assistance in applying to the Oregon Registry.

ECE-221 Observation & Guidance II in ECE Settings
4 credits, Fall
Designed to help students explore in greater depth the observation and guidance of children from birth-3rd grade within the classroom environment. In this more advanced course, the student focuses on additional observation and guidance techniques for observing groups of children and addresses challenging behaviors and other issues within the early childhood environment. The practitioner's role in using observation to promote his/her own development and to assist in the development of the children is explored in depth. Prerequisite: Pass ECE-121 or instructor consent.

ECE-235 Nutrition, Music & Movement
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 & Families Cope with Stress
3 credits, Spring
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 I
3 credits, Winter
Focuses on an introduction of creating physical and social environments and curriculum for children six weeks to six years 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 & Curriculum Planning II
3 credits, Fall
Builds upon knowledge and skills learned in ECE-240: Environments and Curriculum Planning I. Emphasis is on application of research-based strategies to implement and evaluate early childhood environments and curriculum. Focus is on integrating content knowledge throughout all classroom activities. Prerequisites: Pass ECE-240 or instructor consent.

ECE-280 Early Childhood Education/CWE
3 credits, Spring
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. Prerequisite: ECE-150, ECE-121, ECE-154. Co-requisite: CWE-281. Required: Instructor consent.

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 young children's development 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 experience, best practices and assessment techniques. Prerequisite: ECE-280, HDF-225, HDF-247. Required: Instructor consent.

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. Prerequisite: ED-254, ECE-240, ECE-291, and HDF-240. Required: Instructor consent.

ED
Education

ED-100 Introduction to Education
3 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 and 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, Spring
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, Fall
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, not offered every term!
Focus is 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 Foundations of Career Technical Education
3 credits, not offered every term
Provides an introduction to the field of Career and Technical Education (CTE). 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 CTE programs, teacher certification, and student organizations. Addresses current trends and issues in the field.

ED-229 Learning and 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, Summer
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 and Community Relations
4 credits, Spring
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. Prerequisites: Pass WRD-098 or placement into WR-121, ECE-150; or instructor consent.

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, Fall/Winter/Spring/Summer
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
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. Corequisite: CWE-281 and successful completion of or current enrollment in ED-100. Required: Instructor consent.

EET

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Electronics Engineering Technology

Courses listed with the EET prefix are the main core classes for the Electronics Engineering Technology program. For additional information contact the Manufacturing department at 503-594-3318.

EET-112 Electronic Test Equipment & Soldering
3 credits, Fall
Provides a basic understanding of operation, accuracy and set-up of general electronic test equipment. Students will set-up, operate, and make measurements using meters, function generator, digital storage oscilloscope and logic analyzer and solder to IPC 610A standards.

EET-127 Semiconductor Circuits I
4 credits, Spring
Introduction to the basic concepts of semiconductor devices and the fundamental principles of the device operation. Industry standard devices will be used. Hands on with diodes, Zeners, LEDs, transistors, and operational amplifier IC circuitry. Prerequisite: EET-137 or instructor consent.

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 & Kirchloff's laws. Recommended: Completion of MTH-050 or higher.

EET-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: Completion of at least one of the following: EET-112, EET-137, MFG-130.

EET-141 Electrical Fundamentals II
4 credits, Winter
Learn methods of electrical circuit analysis. Use Norton and Thevenin source conversion and constant current sources. Inductors, capacitors and transient analysis of RC and RL circuits will also be covered. Prerequisite: EET-137 or instructor consent.

EET-142 Electrical Fundamentals III
4 credits, Spring
AC circuits analysis, peak, average, RMS, and peak-to-peak voltages in relation to AC circuits. Phase, impedance, power, energy, frequency, and transformers are covered. Prerequisite: EET-141 or instructor consent.

EET-157 Digital Logic I
3 credits, Winter
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. Recommended: Completion of EET-137 and MTH-050.

EET-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: Current enrollment in or successful completion of EET-137 or MFG-130; or instructor consent.

EET-227 Semiconductor Circuits II
3 credits, Fall
Second in a series concentrating on the application, design and circuit analysis of transistor amplifying and switching circuits. Industry standard devices will be used. Prerequisite: EET-127 or instructor consent.

EET-230 Lasers 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-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: Completion of EET-139.

EET-250 Linear Circuits
3 credits, Winter
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. Prerequisite: EET-137 or instructor consent. Recommended: Completion of EET-127.

EET-252 Control Systems
3 credits, Winter
Covers basic control system and subsystems used controllers, sensors, transducers, motion and motor control systems. Recommended: Completion of EET-137.

EET-254 Introduction to Microcontrollers
4 credits, Winter
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. Prerequisite: EET-157 or instructor consent. Recommended: Completion of EET- 257.

EET-257 Digital Logic II
4 credits, Spring
Bus systems and computer peripherals & systems using latches, registers, counters, and memory circuits are developed and analyzed. Prerequisite: EET-157 or instructor consent.

EL

Study Skills

See also Reading (RD)

EL-085 Study Skills for Math
1 credit, not offered every term
Focuses on study strategies specific to math, including note taking; reading math textbooks; preparing for, taking, and analyzing math tests. Addresses math anxiety, memory techniques and effective habits for success in math. Corequisite: MTH-020.

EL-090 Applied Study Skills
3 credits, Fall/Winter
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. Prerequisites: Placement in WRD-080 or instructor consent.

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.

EL-111 College Study Skills
3 credits, Fall/Winter/Spring
Emphasizes time management, listening/notetaking, testing skills/anxiety, library resources, learning styles, study/reading textbooks, concentration. Prerequisite: Pass WRD-080 or placement in WRD-090; or instructor consent.

EMT

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Emergency Medical Technology

EMT-101 EMT Part I
5 credits, Fall/Winter/Spring/Summer
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. Prerequisite Pass WRD-098 or placement in WR-121, pass MTH-060 with a C or better or placement in MTH-065. Required: AHA CPR Healthcare Provider or equivalent, or instructor consent.

EMT-102 EMT Part II
5 credits, Fall/Winter/Spring/Summer
Continuation of EMT-101. Focus on: medical and trauma emergencies, EMS operations, and special populations. Includes 16 hours of observational time in an emergency department and with an EMS unit. Prerequisite: Pass EMT-101.

EMT-105 Introduction to Emergency Medical Services
3 credits, Fall
Introduces the student to EMS. Examines the career path for paramedics. Explores structure and function of EMS systems. Includes roles and responsibilities, operations, medico-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. Prerequisite: Pass 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 credits for the CCC one-year EMT certificate program and for students transferring to two-year AAS-EMT program. Prerequisite: Pass 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 credits for the CCC one-year EMT certificate program. Required for transferring to two-year AAS-EMT program. Prerequisite: Pass EMT-101.

EMT-217 Basic EKG Interpretation I for EMTs
1 credit, Spring
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.

EMT-218 Basic EKG Interpretation II for EMTs
1 credit, Spring
This course builds upon the knowledge gained in EMT-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.

ENG

English

ENG-104 Introduction to Literature: Fiction
4 credits, Fall/Summer

Introduce students to literary genres: poetry, fiction, drama, essays, and nonfiction. May include graphic novels and electronic media. Course will explore literary elements, encourage personal and cultural reflection, incorporate literary theories, and provide models of close reading and written analysis. Recommended for students with no previous college coursework in literature. Recommended: Pass 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: Pass WRD-098 or placement in WR-121.

ENG-106 Introduction to Literature: Poetry
4 credits, Spring

An Introduction to American and international poetry. Explores the fundamental elements of poetry and examines the historical, social, and cultural significance of various poems. Students engage in literary analysis, use literary terminology, and develop personal and scholarly responses to poetry. Recommended: Pass WRD-098 or placement in WR-121.

ENG-107 World Literature: Ancient
4 credits, Fall

Literature of the ancient world: epic, lyric, and dramatic literature with an emphasis on Greek, Roman, Hebrew, Egyptian, and Hindu works. Through class discussion and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, and relate the readings to their own lives and the world. Recommended: Pass WRD-098 or placement in WR-121.

ENG-108 World Literature: Medieval through Enlightenment
4 credits, Winter

Readings from the Middle Ages through the eighteenth century Enlightenment period, emphasizing Cervantes, Dante, and Voltaire. Through class discussion and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, and relate the readings to their own lives and the world. Recommended: Pass WRD-098 or placement in WR-121.

ENG-109 World Literature: Romantic through Modern
4 credits, Spring

Readings from the late eighteenth century Romantic period through modern times, ranging from Russia to Nigeria to Colombia. Through class discussion and written work, students practice close reading and literary interpretation, explore the readings' contemporary relevance, and relate the readings to their own lives and the world. Recommended: Pass WRD-098 or placement in WR-121.

ENG-116 Introduction to Literature: Comics
4 credits, 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. Prerequisite: Pass WRD-098 or placement in WR-121; or instructor consent.

ENG-121 Mystery Fiction
4 credits, Fall

An introduction to the genre of detective or mystery fiction. Students will read, discuss, and analyze short stories and novels by writers including Edgar Allan Poe, Sir Arthur Conan Doyle, Agatha Christie, Dorothy Sayers, Raymond Chandler, and Sue Grafton. Recommended: Pass WRD-098 or placement in WR-121.

ENG-130 Leadership in Literature
4 credits, Spring

Examines the nature of leadership by analyzing characters in major literary works. Recommended: Pass WRD-098 or placement in WR-121.

ENG-194 Introduction to Film
4 credits, Fall

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: Pass 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: Pass 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: Pass 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: Pass WRD-098 or placement in WR-121.

ENG-204 Survey of English Literature, Part 1
4 credits, Fall

Representative study of British literature, including major works, writers, and literary forms, from its beginnings through early eighteenth century. Readings from the Anglo-Saxon, Middle English, Renaissance, earlier seventeenth century, and Restoration periods. Recommended: Pass WRD-098 or placement in WR-121.

ENG-205 Survey of English Literature, Part 2
4 credits, Winter
Representative study of British literature, including major works, writers, and literary forms. Late eighteenth century through modern, with readings from the Romantic, Victorian, and modern periods. Recommended: Pass 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. Prerequisite: Pass WRD-098 or placement in WR-121.

ENG-214 The Graphic Memoir
4 credits, Winter
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. Prerequisites: Pass WRD-098 or placement in WR-121; or instructor consent. Recommended: Pass ENG-116.

ENG-217 Games and Literature
4 credits, not offered every year
This class explores games as important narrative forms with strong ties to the literary, social, and historical times in which they are created. Recommended: Pass WRD-098 or placement in WR-121.

ENG-218 Arthurian Legends
4 credits, not offered every year
Origins and mystique of Arthurian legend from medieval to modern times. Examines issues of idealism, individualism, and spiritual renewal through discussion of knighthood, chivalry, and the Holy Grail quest. Prerequisite: Pass WRD-098 or placement in WR-121; or instructor consent.

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. Prerequisite: Pass WRD-098 or placement in WR-121; or instructor consent.

ENG-226 Popular Literature
4 credits, Winter/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. Prerequisites: Pass WRD-098 or placement in WR-121; or instructor consent.

ENG-230 Documentary & Experimental Filmmaking
4 credits, not offered every term
Introduction to the concepts and fundamentals of documentary and experimental filmmaking. This lecture/studio course will explore tradition and new technological approaches to creating digital documentaries and avant-garde film. Recommended: Pass WRD-098 or placement in WR-121; pass DMC-104 or previous experience with film studies and digital video.

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: Pass 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: Pass WRD-098 or placement in WR-121.

ENG-242 Middle Eastern Mythology
4 credits, not offered every year
Explores Middle Eastern mythology and its cultural, social, and literary significance; views Middle Eastern mythology in its historical and geographical positions and in the larger context of Western literary tradition; introduces theoretical approaches to mythology and basic literary elements and terminology; considers how studying myth affects and influences reading other work; explores Middle Eastern myth's influence on the Hebrew Bible. Recommended: Pass WRD-098 or placement in WR-121.

ENG-250 Greek Mythology
4 credits, not offered every term
Explores the historical, cultural, social, and literary significance of Greek myths; views Greek mythology in its historical and geographic positions and in the larger context of Western civilization and literary tradition; considers how studying myth affects and influences reading other works; introduces theoretical approaches to mythology and basic literary elements and terminology. Recommended: Pass 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: Pass 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: Pass WRD-098 or placement in WR-121.

ENG-253 American Literature, Part 1
4 credits, Winter
American literature from the pre-colonial period to the mid-nineteenth century, both major and lesser-known writers. Recommended: Pass WRD-098 or placement in WR-121.

ENG-254 American Literature, Part 2
4 credits, Spring
Representative readings from the mid-nineteenth to twentieth centuries. Surveys the development of American fiction, nonfiction, poetry, and drama through the study of the works of both major and lesser known writers. Recommended: Pass WRD-098 or placement in WR-121.

ENG-255 American Literature
4 credits, not offered every year
Focus on selected authors and works of contemporary American fiction, poetry, nonfiction, and drama. Theme changes yearly. Recommended: Pass WRD-098 or placement in WR-121.

ENG-260 Introduction to Women Writers
4 credits, not offered every year
The study of the works (eg. 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: Pass WRD-095 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: Pass WRD-098 or placement in WR-121.

ENG-265 Witness Literature
4 credits, not offered every year
This course analyzes the transformation of immediate experience of extreme events like disasters, trauma, and war into literature. At the intersection of writing and social justice, witness literature shows the way that writing and art are the primary vehicles for most cultures to transform direct experience into enduring meaning. Recommended: Pass WRD-098 or placement in WR-121.

ENG-266 The Literature of War
4 credits, Spring
Fiction, poetry, nonfiction, memoir, and popular song lyrics dealing with the experience of war. Crane, Remarque, Trumbo, Heller, Vonnegut, Owen, Sassoon, writers of the Vietnam War such as O'Brien and Caputo will be examined and discussed. Literature emerging from the wars in Afghanistan and Iraq will also be covered. Recommended: Pass 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 Feminism, Psychoanalysis, Marxism, reader-response, and New Historicism.

ENG-280 English/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. Provides students with on-the-job experience in the field of English studies. Corequisite: CWE-281. Required: Instructor consent.

ENG-295 Revolutionary Film
4 credits, not offered every year
Focuses on revolutionary styles of filmmaking from around the world that continue to have an effect on how movies are made today. Recommended: Pass WRD-098 or placement in WR-121.

ENG-296 Adaption: Literature into Film
4 credits, not offered every year
Adaptation: Literature into Film is an exploration into the art of transforming literary texts into films. 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. Recommended: Pass WRD-098 or placement in WR-121.

ENGR
Engineering

ENGR-111 Introduction to Engineering
3 credits, Fall/Winter
Introduction to basic ideas and tools of the engineering profession. Rudiments and methods of engineering analysis, design, and problem solving culminating in a design project. The class will cover all facets of design, including background research, requirement specification and prioritization, development, prototype construction, testing, and evaluation for future redesigns. Prerequisite: Previous completion of or current enrollment in MTH-112 or higher; or instructor consent.

ENGR-112 Engineering Programming
3 credits, 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: Previous completion of or current enrollment in MTH-112 or higher; or instructor consent.

ENGR-115 Engineering Graphics
3 credits, Spring
Mechanical design automation software used to design parts and assemblies, design methods used to build, maintain and modify parts. Covers 2D documentation and isometric views cooperated with ASME standards. Includes real time shaded 3D modeling. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Previous completion of or current enrollment in MTH-112 or higher; or instructor consent.

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. Prerequisite: Pass MTH-111 or instructor consent.

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. Prerequisite: Pass MTH-252 or instructor consent. 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. Prerequisite: Pass ENGR-211 and PH-211; or instructor consent.

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. Prerequisite: Pass ENGR-211 or instructor consent.

ENGR-221 Electrical Circuit Analysis
4 credits, Fall/Spring
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. Prerequisite: Pass MTH-252 or instructor consent.

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: Pass ENGR-221 or instructor consent.

ENGR-223 Electrical Circuit Analysis III
4 credits, Spring
Final course in the electrical circuits sequence. The main emphasis 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: Pass ENGR-222 or instructor consent.

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. Prerequisite: ENGR-171 or instructor consent.

ENL
Courses with this prefix may transfer to a four-year institution. Courses are intended for PIE students.

English as a Non-Native Language

ENL-117 Advanced Grammar A
3 credits, Fall/Spring
Part A of a two part series. Present and practice of adverb clauses, discourse connectors, reported speech, and noun clauses in written and spoken English. Required: Instructor consent.

ENL-118 Advanced Grammar B
3 credits, Winter/Summer
Part B of a two part series of classes. Present and practice count/noncount nouns, definite/indefinite articles, and modals in written and spoken English. Required: Instructor consent.

ENL-119 Advanced Reading/Writing
6 credits, Fall/Winter/Spring/Summer
Advanced students practice reading, writing and editing skills useful in both academic and workplace contexts. Students generally take this course for more than one term in order to satisfy all requirements. Required: Instructor consent.

ENL-120 Advanced Communication Skills A
3 credits, Fall/Spring
Develops fluency in speaking and listening in the contexts of schools, work, family and community. Prepares students for success in discussions, interviews, conferences, presentations, and academic note taking. Required: Instructor consent.

ENL-121 Advanced Communication Skills B
3 credits, Winter-Summer
This is part B of a course that is designed to help advanced non-native speakers of English gain fluency in speaking and listening in the contexts of school, work, family and community. Prepares students for success in discussions, interviews, conferences, presentations, and academic note taking. Required: Instructor consent.

ESH
Courses with this prefix may not transfer with to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Environmental Safety & Health

ESH-100 Environmental Regulations
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.

ESH-101 Hazardous Waste Management
2 credits, Fall/Winter/Spring
DEQ authorized class. This class offers ways to reduce, identify, store, and dispose of hazardous waste in Oregon. Certificate is available from DEQ.

ESL

Courses with this prefix will not transfer to a four-year institution. Courses are intended for ESL students.

English as a Second Language

ESL-010 Beginning Grammar
0 credit, Fall/Winter/Spring/Summer
English language learners study and practice the simple present tense of the verb "to be," nouns, descriptive and possessive adjectives, prepositions of place and time, and simple sentence structures in written and spoken English. Required: Instructor consent.

ESL-012 Beginning ESL
0 credit, 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: Instructor consent.

ESL-014 Beginning Reading and Writing
0 credit, Fall/Winter/Spring/Summer
English language learners read and write the alphabet, sight words, and simple sentences. Required: Instructor consent.

ESL-020 Upper Beginning Grammar
0 credit, 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: Instructor consent.

ESL-024 Upper Beginning Reading and Writing
0 credit, 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: Instructor consent.

ESL-025 Upper Beginning Writing
0 credit, Summer
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: Instructor consent.

ESL-030 Intermediate Grammar A
0 credit, Fall/Spring
One of a two-part series. English language learners extend their understanding of basic verb forms (simple present, simple past, and present progressive), study and practice past progressive, used to, future time formations, and wh-questions in written and spoken English. Required: Instructor consent.

ESL-031 Intermediate Grammar B
0 credit, Winter/Summer
One of a two-part series. English language learners study and practice present perfect verb forms with time expressions and adverbs of frequency, modals of ability, permission, and advice, and comparative and superlative adjectives in written and spoken English. Required: Instructor consent.

ESL-032 Intermediate Conversation
0 credit, 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: Instructor consent.

ESL-034 Intermediate Reading/Writing
0 credit, 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: Instructor consent.

ESL-035 Intermediate Writing
0 credit, Summer
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: Instructor consent.

ESL-040 Upper Intermediate Grammar A
0 credit, Fall/Spring
One of a two-part series. English language learners study and practice verb forms that frequently occur together, gerunds, infinitives, and causative verbs in written and spoken English. Required: Instructor consent.

ESL-041 Upper Intermediate Grammar B
0 credit, Winter/Summer
One of a two-part series. English language learners study and practice adjective clauses, phrasal verbs, and passive voice in written and spoken English. Required: Instructor consent.

ESL-042 Upper Intermediate Conversation
0 credit, 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: Instructor consent.

ESL-044 Upper Intermediate Reading/Writing
0 credit, 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: Instructor consent.

ESL-046 Editing for Better Writing
0 credit, Fall/Winter/Spring
For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity. Required: Instructor consent.

ESL-047 Editing Part I
0 credit, not offered every year
English language learners improve their writing through editing. Required: Instructor consent.

ESL-048 Editing Part II
0 credit, not offered every year
English language learners improve their writing through editing. Required: Instructor consent.

ESL-050 Advanced Grammar A
0 credit, Fall/Spring
English language learners study and practice adverb clauses, discourse connectors, and noun clauses in written and spoken English.. Required: Instructor consent.

ESL-051 Advanced Grammar B
0 credit, Winter/Summer
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: Instructor consent.

ESL-052 Advanced Communication Skills I
0 credit, 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: Instructor consent.

ESL-053 Advanced Communication Skills II
0 credit, Winter/Summer
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: Instructor consent.

ESL-054 Advanced Reading/Writing
0 credit, 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.

ESL-060 Vocabulary Building I
0 credit, Fall
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: Instructor consent.

ESL-061 Vocabulary Building II
0 credit, 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: Instructor consent.

ESL-062 ESL Reading I
0 credit, 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.

ESL-063 ESL Reading II
0 credit, 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 I will develop their reading skills at a higher level in ESL Reading II. Required: Instructor consent.

ESL-066 Bridge to College and Career
0 credit, not offered every term
English Language Learners apply their developing English language skills to read, write, speak and listen in real world contexts provided by college and career-related materials, intensifying their language acquisition process while preparing to move beyond the ESL program. Required: Instructor consent.

ESL-067 Spelling
0 credit, not offered every term
English language learners learn about and practice English spelling patterns and rules and individualize instruction to address spelling challenges. Required: Instructor consent.

ESL-068 Bridge to Computers
0 credit, 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: Instructor consent.

ESL-080 ESL Tutoring (Literacy)
0 credit, 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: Instructor consent.

ESL-082 Assess/Evaluate New Students
0 credit, 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: Instructor consent.

ESL-083 Educational Planning for Returning Students
0 credit, 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: Instructor consent.

ESL-087 Computer Lab
0 credit, Fall/Winter/Spring/Summer
Provides opportunities to improve English language skills by using language learning software and internet websites.

ESL-091 ESL Skills Lab
0 credit, 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.

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, environmental effects of agriculture, and endangered species. Recommended: Pass MTH-060 or MTH-098 with a C or better, or placement in MTH-065; pass 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, indoor air pollution, ozone depletion, and climate change. Recommended: Pass MTH-060 or MTH-098 with a C or better, or placement in MTH-065; pass 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 restoration, water management, water pollution, urban environments, and environmental sustainability. Recommended: Pass MTH-060 or MTH-098 with a C or better, or placement in MTH-065; pass WRD-098 or placement in WR-121.

EST

Courses with this prefix may not transfer to a four-year institution.

Employment Skills Training

EST-180 Employment Skills Internship
1-12 credits

Fall/Winter/Spring/Summer

The internship is an opportunity to develop entry level skills in a specific occupational area and to practice the career management skills necessary to obtain, sustain, and advance employment. A Training and Evaluation Plan is developed and managed in consultation with the student, internship supervisor, and faculty. Coursework will focus on marketable skills through job site training tailored to particular student needs.

FN

Food & Nutrition

FN-110 Personal Nutrition
3 credits, Fall/Winter/Spring/Summer

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. Basic nutrition course for students with little or no science background.

FN-225 Nutrition
4 credits, Fall/Winter/Spring/Summer

Explores the role of nutrients in the development and maintenance of a healthy body. Examines the relationship between diet and health. Students apply knowledge of nutritional adequacy through computer-aided diet analysis. Discusses current nutrition recommendations and controversies. Meets requirement for most nursing programs. Recommended: Strong background in anatomy and physiology, biology and 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 the student a fundamental knowledge of pronunciation and intonation, structure and syntax as well as comprehension skills sufficient for basic communicative proficiency in the language. Student learning is assessed by means of oral interviews, written tests, written homework and classroom participation. Recommended: Pass WRD-098 or placement in WR-121.

FR-102 First-Year French II
4 credits, Winter

Second term of a three-term foundational, multimedia course in beginning French designed to give the student a fundamental knowledge of pronunciation and intonation, structure and syntax as well as comprehension skills sufficient for basic communicative proficiency in the language. Student learning is assessed by means of oral interviews, written tests, written homework and classroom participation. Prerequisite: Pass FR-101 or instructor consent.

FR-103 First-Year French III
4 credits, Spring

Third term of a three-term foundational, multimedia course in beginning French designed to give the student a fundamental knowledge of pronunciation and intonation, structure and syntax as well as comprehension skills sufficient for basic communicative proficiency in the language. Student learning is assessed by means of oral interviews, written tests, written homework and classroom participation. Prerequisite: Pass FR-102 or instructor consent.

FR-201 Second-Year French I
4 credits, Fall

The second year of academic French expands on first-year French in the review of grammar and in the cultural reading material. Communication skills are emphasized stressing oral proficiency. Prerequisite: Pass FR-103 or instructor consent.

FR-202 Second-Year French II
4 credits, Winter
The second year of academic French expands on first-year French in the review of grammar and in the cultural reading material. Communication skills are emphasized stressing oral proficiency. Prerequisite: Pass FR-201 or instructor consent.

FR-203 Second-Year French III
4 credits, Spring
The second year of academic French expands on first-year French in the review of grammar and in the cultural reading material. Communication skills are emphasized stressing oral proficiency. Prerequisite: Pass FR-202 or instructor consent.

FR-211 Intermediate French Conversation
3 credits, Fall
Development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary French-language media, presentations, games, and interviews of classmates. Major topics and level of conversational difficulty will parallel FR-201. Prerequisites: Pass FR-103 with a C or better, or instructor consent.

FR-212 Intermediate French Conversation
3 credits, Winter
Development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary French-language media, presentations, games and interviews of classmates. Major topics and level of conversational difficulty will parallel FR-202. Prerequisite: Pass FR-103 with a C or better, or instructor consent.

FR-213 Intermediate French Conversation
3 credits, Spring
Development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary French-language media, presentations, games and interviews of classmates. Major topics and level of conversational difficulty will parallel FR-203. Prerequisite: Pass FR-103 with a C or better, or instructor consent.

FRP

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Fire Science (Wildland)

The National Wildfire Coordinating Group (NWCG) is the governing body for wildland firefighting.

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. Corequisite: 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. Corequisite: FRP-101.

FRP-107 Wildland Fire Career Portfolio
1 credit, 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. Prerequisites: FRP-130 or instructor consent.

FRP-130 Introduction to Wildland Firefighting (S-130/S-190/L-180)
3 credits, not offered every term
This course provides an introduction to wildland fire behavior, wildland firefighting safety and wildland firefighting techniques. The course provides the student with the basic skills necessary to fight wildland fires under close supervision. Students will demonstrate the ability to recognize basic weather, topography and fuel characteristics that influence wildland fire behavior. Students will gain the skills to apply the standard wildland fire safety principles, the use of proper protective equipment, the use of hand tools and hose lines for fire control operations and demonstrate the acquired skills during the field exercises.

FRP-131 Advanced Firefighter Training (S-131)
1 credit, not offered every term
This course provides instruction that meets the training requirements for the Wildland Firefighter Type 1 position. The course includes student interaction through the use of reference guides in order to make wildland fire ground assessments and to identify and address safety issues. Prerequisite: Pass FRP-130 (S-130) or instructor consent.

FRP-180 Wildland Fire/CWE
2 or 6 credits, not offered every term
Cooperative Work Experience. Supervised work experience in wildland fire, forestry management, wilderness survival or other related occupations. This course is variable credit. Students can take the course for between 2 and 6 credits. Corequisite: CWE-281. Required: Instructor consent.

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 including forest policy development and the current federal and state laws. Identify and define forest ecosystem management principles and activities; wildlife, watershed and recreation values and conflicts. Compare forest management on federal, state and private lands. Prerequisites: FRP-101 and FRP-102; or instructor consent.

FRP-205 Forest Management Assessments & 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 decisions. Recommended: FRP-201. Prerequisites: FRP-101 and FRP-102; or instructor consent.

FRP-211 Portable Pumps and Water Use
2 credits, not offered every term
Basics of portable pumps and water hydraulic systems used to extinguish wildland fires. Includes classroom and field exercises. Recommended: Pass FRP-130.

FRP-212 Wildfire Power Saws (S-212)
2 credits, not offered every term
This courses provides the introduction to the function, maintenance and use of internal combustion engine powered chain saws. Students will be instructed on and demonstrate the safe use of chain saws in wildland fire fighting operations. During field exercises the students will demonstrate and apply the proper techniques for chain saw operation, identify the use of proper personal protective equipment, demonstrate how to inspect and maintain a chain saw, demonstrate proper cutting techniques for trees and brush and discuss and apply proper hazard recognition techniques prior to and during cutting operations. Prerequisites: FRP-130 or instructor consent. Requirements: 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.

FRP-215 Fire Operations in the Urban Interface
2 credits, not offered every term
Instruction in the assessment of home and structures located in and around forest, grass and brush lands (urban interface) for vulnerability to a wildland fire. Assessment includes the construction features of homes and structures that can provide protection from a wildland fire, the application of basic tactical operations for fire suppression activities, the assignment appropriate resources to fire suppression activities and the safe operational requirements for the firefighters and the public. Prerequisites: Pass FRP-130 (S-130, 190, L-180) or instructor consent

FRP-216 Driving for the Fire Service (S-216)
2 credits, not offered every term
NWCG S-216 certified. Knowledge and skills required of drivers to safely and efficiently operate fire vehicles in the fire environment.

FRP-220 Initial Attack Incident Commander (S-200)
1 credit, not offered every term
NWCG S-200 certified (ITC4). Provides individuals in charge of the initial attack of small, non-complex fires the training needed for readiness, mobilization, size-up the fire; and the administrative requirements that must be completed by the incident commander.

FRP-230 Crew Boss (Single Resource) (S-230)
3 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. The students will demonstrate the ability to prepare for the assignment, define the preparation and mobilization for the fire crew, travel and arrive at the assignment, address safety and risk management principle prior to engaging the crew in an operation, define key firefighting tactics, describe the crew boss duties when the crew is in base camp and prepare the crew for demobilization/release after completing the assignment. Requirements: Current S-130; S-190 certifications.

FRP-231 Engine Boss (Single Resource) (S-231)
1 credit, not offered every term
NWCG S-231 certified. Develop proficiency in the performance of all duties associated with the single resource engine boss. Prerequisite: Pass FRP-230 (S-230) or instructor consent.

FRP-236 Heavy Equipment Boss (S-236)
2 credits, not offered every term
Provides the student will the basic knowledge to perform the administrative tasks, equipment inspection procedures, safety procedures, communications procedures and preparation of heavy equipment used in wildland firefighting and all hazard type non-fire incident response.

FRP-243 Survivor I: Maps, Compass, GPS
2 credits, not offered every term
Use maps, compass, grid locations, land descriptions, topography, distance, directions and Global Positioning Systems (GPS).

FRP-244 Survivor II: Wilderness
2 credits, not offered every term
Be prepared to survive in the wilderness: the psychology of surviving and what to do when things go wrong. The USAF Search & Rescue Survival Manual is the text.

FRP-245 Survivor III: Weather of the NW
2 credits, not offered every term
Designed for the wildland firefighter, mariner, hiker, hunter and others who need to know the basics of weather forecasting.

FRP-246 Survivor IV: Wilderness First Aid
2 credits, not offered every term
Covers back-country first aid and evacuation techniques in a wilderness setting.

FRP-247 Survivor V: Dangerous Animals
2 credits, not offered every term
Focuses on Northwest animal's and insect's habits, habitats, how to prevent and avoid conflict with them and what to do if you're attacked. First-hand accounts, stories, CDC statistics and recommendations will be included.

FRP-248 Survivor VI: Introduction to Search & Rescue
2 credits, not offered every term
Familiarize students with all aspects of Search and Rescue at the beginning level including search philosophy, tactics, operations and behavior of the lost person.

FRP-249 Leadership for Firefighters (L-280)
2 credits, not offered every term
The course prepares the student for a wildland fire leadership role at the basic level. Students will be able demonstrate basic leadership skills through interactive classroom discussions and scenario based exercises. Prerequisite: Pass FRP-130 (S-130) or instructor consent.

FRP-259 Task Force/Strike Team Leader (S-330)
2 credits, not offered every term
The course provides students with the initial required classroom training to perform as a leader of several wildland firefighting apparatus assigned to a wildland fire. This course provides the students with interactive group exercises and scenarios in which the students will gain experience managing multiple resources both on and off assignment at an incident. Prerequisite: Pass FRP-230 (S-230), FRP-231 (S-231), and FRP-290 (S-290); or instructor consent.

FRP-270 Basic Air Operations (S-270)
1 credit, not offered every term
NWCG S-270 certified. A survey of the use of aircraft in fire suppression and how to conduct yourself in and around aircraft.

FRP-271 Helicopter Crewmember (S-271)
4 credits, not offered every term
The course provides the student with the helicopter aviation classroom and field training required for the Helicopter Crew Member (HECM) position for wildland firefighting operations and support activities. Through exercises the students will demonstrate proper radio communications with helicopters, the identification and application of helicopter performance/limitations and load calculations, the application of standard risk management and safety principles and the proper techniques for preparing equipment or passengers for a helicopter mission. Prerequisites: Pass FRP-130 and FRP-270; or instructor consent.

FRP-280 Wildland Fire/Advanced CWE
6 credits, not offered every term
Cooperative Work Experience. Supervised experience in wildland firefighting. Variable 2-6 credit course. Prerequisites: Pass FRP-130 and FRP-107. Required: Instructor consent.

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. Prerequisite: Pass FRP-130 (S-130/S-190/L-180) or instructor consent.

FRP-294 Intermediate Incident Command System (I-300)
2 credits, not offered every term
This course provides the student with a description and function of the positions and duties found the Incident Command System. The students will apply the appropriate titled functional positions with the Incident Command System to various exercises in order to create an Incident Action Plan that is designed to manage large or complex incidents or events.

FRP-295 Advanced ICS: ICS for Command and General Staff & Complex Incidents (I-400)
2 credits, not offered every term
This course provides the student with the advanced level instruction and application of the functional positions and organizations found within the Incident Command System (ICS). Through exercises, the students will apply the functional/titles and positions within ICS in order to identify and address incident or events needs and define the inter-agency coordination required to effectively manage large scale incidents or events. Prerequisite: Pass FRP-294 (I-300) or instructor consent.

FRP-296 Introduction to Wildland Fire Behavior Calculations (S-390)
3 credits, not offered every term
This course introduces the students to the fire behavior calculations used to make estimations on wildland fire behavior and fire spread. Student 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. Prerequisite: Pass FRP-290 (S-290) or instructor consent.

FYE
First-Year Experience

FYE-101 First-Year Experience Level I
2 credits, Fall/Winter/Spring/Summer
This is the first course in the sequence which is 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 both 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 is a second course 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. Prerequisite: Completion of FYE-101 or instructor consent.

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 chunks for successful completion. Prerequisite: Completion of FYE-102 or instructor consent.

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: Pass WRD-090 or placement in RD-115.

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, deserts and beaches. Labs focus on geologic and topographic maps and how they are used to understand geologic features and local geology. Recommended: Pass WRD-090 or placement in RD-115.

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: Pass WRD-090 or placement in RD-115.

G-145 Geology of Pacific Northwest
4 credits, not offered every year
An introductory lab course that explores the geology and historic development of the 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. Recommended: Pass WRD-090 or placement in RD-115; pass MTH-065 or placement in MTH-095.

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 beaches, rivers, mass wasting, glaciers, groundwater and deserts. Topographic/geologic maps are used to understand geologic features and local geology. Recommended: Pass WRD-090 or placement in RD-115; pass MTH-065 or placement in MTH-095.

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. Recommended: Pass WRD-090 or placement in RD-115; pass MTH-065 or placement in MTH-095.

G-280 Geology/CWE
2-6 credits, not offered every term
Cooperative work experience. Provides students with on-the-job experience and training related to geology. Corequisite: CWE-281. Required: Instructor consent.

GED

Courses with this prefix will not transfer to a four-year institution.

General Educational Development

GED-011 GED En Español
0 credit, Fall/Winter/Spring/Summer
Instrucción del desarrollo de habilidades básicas ofrecida en español. El examen de diagnostic 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 Campus Learning Center. Required: Instructor consent.

GED-015 GED Preparation
0 credit, Fall/Winter/Spring/Summer
Basic academic skill development. Diagnostic tests determine individual academic needs. Students who pass General Educational Development (GED) tests receive high school equivalency certificates. Open-entry, open-exit classes. Required: Instructor consent.

GED-049 Latino GED & Life Skills
0 credit, Fall/Winter/Spring/Summer
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: Instructor consent.

GEO

Geography

GEO-100 Introduction to Physical Geography
4 credits, not offered every term
Analyzes the physical elements of the Earth's surface and atmosphere. Focuses on natural processes that create physical diversity on the Earth including weather and climate, biosphere, soils and landforms. Recommended: Pass WRD-090 or placement in RD-115.

GEO-110 Cultural & Human Geography
4 credits, not offered every term
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 landscapes of the world. Recommended: Pass WRD-090 or placement in RD-115.

GEO-121 Regional Geography of the Developing World
4 credits, not offered every term
Provides students with the fundamental knowledge of the cultural and physical geography of developing world regions including Middle America, South America, SW Asia & North Africa, Sub-Saharan Africa, South Asia, Southeast Asia, East Asia and the Pacific world. Recommended: Pass WRD-090 or placement in RD-115.

GEO-122 Regional Geography of the Developed World
4 credits, not offered every term
Provides students with the fundamental knowledge of the cultural and physical geography of developing world regions including Anglo-America; Europe; Russia; East Asia: Japan, Taiwan; South Korea; Australia and New Zealand. Recommended: Pass WRD-090 or placement in RD-115.

GEO-130 Introduction to Environmental Geography
4 credits, not offered every term
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: Pass WRD-090 or placement in RD-115.

GEO-208 Geography of the U.S. & Canada
4 credits, not offered every term
Provides students with the fundamental geographical knowledge of the United States and Canada and their paths of development. Presents the spatial arrangement of culture, economics, politics, and the natural environment. Recommended: Pass WRD-090 or placement in RD-115.

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. Corequisite: CWE-281. Required: Instructor consent.

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: Pass 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. Prerequisite: Pass GER-101 or instructor consent.

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. Prerequisite: Pass GER-102 or instructor consent.

GER-201 Second-Year German I
4 credits, Fall
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. Prerequisite: Pass GER-103 or instructor consent.

GER-202 Second-Year German II
4 credits, Winter
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. Prerequisite: Pass GER-201 or instructor consent.

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. Prerequisite: Pass GER-202 or instructor consent.

GIS

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Geographic Information Systems

For additional information contact the Manufacturing Department at 503-594-3318.

GIS-201 Introduction to Geographic Information System

3 credits, Fall/Summer

The class covers key concepts, methodologies, and problem solving techniques used in a GIS. It maps out the GIS profession and how it relates to today's world. The focus of the class is the ArcGIS software. The class introduces students to the basics of viewing, analyzing and mapping GIS data using the ArcGIS software.

GIS-232 Data Collection & Application

3 credits, Spring

An introduction to data collection techniques and applications. It explores different techniques to collect spatial and tabular data. The class focuses on GPS (Global Positioning System) data collection using mapping grade GPS units. ArcGIS mobile extensions are used to compile, extract and use collected data. Prerequisite: GIS-201 or instructor consent.

GIS-236 Programming for GIS

1 credit, Fall

An introduction to Object Orientated Programming (OOP) and Visual Basic for Applications (VBA) programming language for ArcGIS. Basics of VBA and ArcObjects are explained so that students can create VBA macros to add or streamline functionality in the ArcGIS environment. Prerequisite: MFG-109 or instructor consent.

GIS-237 Advanced Programming for GIS

1 credit, Winter

Advanced training in Object Orientated Programming (OOP) and Visual Basic for Applications (VBA). Focus on ArcObjects and how to use object model diagrams to find out what individual objects do. Program objects to execute specific GIS tasks in the ArcGIS environment. Prerequisite: GIS-236 or instructor consent.

GIS-255 Introduction to ArcGIS I

1 credit, not offered every term

An introduction to the ArcGIS software. It covers fundamental GIS concepts. Students learn the basics of viewing, analyzing and mapping GIS data in the ArcGIS environment.

GIS-280 GIS/CWE

2-6 credits,
Fall/Winter/Spring/Summer

Cooperative Work Experience (co-op) is a process of education that integrates a student's classroom work with experience obtained through a cooperating employer. Corequisite: CWE-281 seminar. Required: Instructor consent.

GIS-281 ArcGIS I

3 credits, Summer/Winter

The ArcGIS software is explored in more detail. The essential skills needed to navigate and operate ArcGIS will be discussed. The class explores geoprocessing tools, spatial and attribute joins, the geodatabase format, raster analysis, geocoding and presenting GIS data. Prerequisite: GIS-201 or instructor consent.

GIS-282 ArcGIS II

3 credits, Spring

An advanced study of the ArcGIS software. Working with geodatabases, feature datasets, feature classes, subtypes, domains and relationship classes. Additional topics include: establishing topological relationships, geometric networks, network analysis and advance editing. Prerequisite: GIS-281 or instructor consent.

GIS-286 Remote Sensing

3 credits, Winter

This course covers the overview of data sources, methodology for remotely sensed data, application of data, and transformation of remotely sensed data into GRID. Prerequisite: GIS-201 or instructor consent.

GRN

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Gerontology

GRN-180 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 & 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 & 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
Work-based experience to 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. Course is variable credit between 2-6 credits per term. Corequisite: CWE-281. Required: Instructor consent; current enrollment in or successful completion of HS-170.

GRN-290 Special Topics in Gerontology
1 credit, 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. May be repeated for up to 6 credits.

GS

General Science
See also Arts and Sciences (ASC).

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: Pass 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: Pass 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: Pass MTH-065 or placement in MTH-095.

GS-107 Astronomy
4 credits, Fall/Winter
A lab course discussing the history of astronomy, the Earth and Moon, all the planets in our solar system, along with asteroids, meteors, and comets. Recommended: Pass WRD-090 or placement In RD-155, or placement in WR-121. Pass MTH-095 with a C or better, or placement in MTH-105 or MTH-111.

HD

Human Development & Career Planning

HD-100 College Survival
1-6 credits, not offered every term
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
Provides students with a service learning experience in a community setting. Students complete 30-180 hours of volunteer work and participate in seminars/discussions to connect volunteer work with an area of study. Required: Instructor consent.

HD-120 College Success
1 credit, Fall/Winter/Spring
Provides strategies for creating college success including self-awareness, personal responsibility, understanding self-management, increasing motivation, meaningful goal setting, effective study habits, use of on and off campus resources.

HD-121 College Success Expanded
3 credits, Fall/Winter/Spring
Provides advanced strategies for creating college success including self-awareness, understanding motivation, employing interdependence, taking personal responsibility, learning style, goal setting, lifelong learning, emotional intelligence, critical thinking, time management, effective study habits/planning, and the use of on and off campus resources.

HD-130 Community College Peer Leadership
2 credits, Spring
Designed for Clackamas Community College peer mentors and peer assistants. Covers a variety of elements that lead to effective leadership in community colleges, including exposure to history of community colleges, FERPA regulations training, communication styles, adult developmental theories, student resource training, and on-site contacts for each of CCC's service areas.

HD-140 Career Exploration
3 credits, Fall/Winter/Spring
Students use information about themselves (values, interest, personality and skills) and information about the world of work (careers and industries) to explore and make long term career decisions.

HD-144 Assertive Communication
1 credit, Fall/Winter/Spring
Provides basic communication skills that students can use to state or declare their rights in a positive fashion to obtain desired results in career, social, and personal relations.

HD-145 Stress Management
1 credit, Fall/Winter/Spring
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 term
Helps students examine beliefs, attitudes, and values behind decisions and actions. The students will examine whether behavior matches their stated beliefs, evaluate the consequences of choices, and focus on clarifying a personal value system.

HD-147 Decision Making
1 credit, Fall/Winter/Spring
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, Fall/Winter/Spring
Introduction to managing conflict in a positive way. Students will examine personal beliefs about conflict and become familiar with techniques for effective in problem solving.

HD-154 Building Self-Confidence
1 credit, Fall/Winter/Spring
This course is designed to address the elements forming and impacting self-confidence, disarming your inner critic, including dealing with fear, self-esteem, personal power, and establishing your center.

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, Fall/Winter/Spring
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, Fall/Winter/Spring
Course is designed to enhance each student's knowledge and understanding about transition and change in their own life and others around them.

HD-161 Multicultural Awareness
1 credit, Fall/Winter/Spring
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-180 Career Development Internship
1-12 credits
Fall/Winter/Spring/Summer
Develop skills in a specific occupation and practice the career management skills necessary to obtain, sustain, and advance employment. A Training and Evaluation Plan is developed and managed in consultation with the student, internship supervisor, and faculty.

HD-185 Prior Learning Portfolio Development I
1 credit, Winter
Students are guided through the required steps of building a portfolio with the goal of requesting college credit for learning acquired through work experience, volunteer work, industry training, etc. Details of the content of the portfolio are explained and alternative options for obtaining college credit through non-traditional learning experiences are reviewed.

HD-186 A Digital You-Building a e-Portfolio
3 credits, Winter
This course offers techniques of developing course and assessment portfolios for application with current CCC course demands, career opportunities and educational pathway planning. The course also serves students seeking assessment for Credit for Prior Learning after learning the mechanics of Credit for Prior Learning (CPL) portfolio development in HD-185. CPL students will develop a detailed portfolio correlating non-traditional learning experiences with related courses at Clackamas Community College, for submission, consideration and evaluation to identified department and instructor at CCC.

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. Co-requisite: HD-208. Required: Instructor consent and student must complete LCOP application. Applications are available in the Counseling Office.

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. Co-requisite: HD-202. Required: Instructor consent and student must complete LCOP application. Applications are available in the Counseling Office.

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, resumés, interviews, and thank you notes.

HD-220 Leadership: Theory Into Practice
2 credits, Fall
Introduces leadership skills and theories. Includes translating theory into practice through ASG-sponsored programming. Strategies for planning, executing and evaluating events and functions are emphasized. Can be repeated for up to 4 credits. Required: Must be a member of CCC's Associated Student Government.

HD-221 Leadership: Group Dynamics
2 credits, Fall/Winter/Spring
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. Can be repeated for up to 4 credits. Required: Must be a member of CCC's Associated Student Government.

HD-222 Leadership: Building Community
2 credits, Fall/Winter/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 cycle. Can be repeated for up to 4 credits. Required: Must be a member of CCC's Associated Student Government.

HD-280 Human Development/CWE
2-6 credits
Fall/Winter/Spring/Summer
Cooperative work experience. Provides students with career-related experience on-the-job at a local organization. Co-requisite: CWE-281. Required: Instructor consent.

HDF

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Family Studies

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, 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. Prerequisite: HDF-225 or instructor consent.

HDF-260 Understanding Child Abuse & Neglect
3 credits, Fall/Winter/Spring
Provides 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.

HE/HPE

Health

HE-163 Body and 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.

HE-164 Body and 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. Prerequisite: HE-163 or instructor consent.

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 fitness by considering diets and dieting, obesity, types of exercise, physical testing, cardio-vascular fitness and nutritional concepts.

HE-205 Youth Addictions
3 credits, Fall/Spring
Increases knowledge of adolescent development and programs designed for prevention, assessment, intervention and treatment of chemically dependent youth. Investigates specific techniques for counseling youth. Required for Criminal Justice and Corrections students.

HE-207 Introduction to Plant Based Living
3 credits, not offered every term
The course is designed to give students a basic understanding of a plant based diet/lifestyle and the benefits of this type of lifestyle. Students will learn about the physical benefits of a plant based diet, GMO's, organic foods, current environmental impacts, impacts of the big agricultural companies as well as the research that has been documented to support the information. Recommended: WRD-090 or higher.

HE-223 Sports Nutrition
3 credits, Fall
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
Explores the interaction and the quality of life. Includes emotional behavior, drugs, disease, nutrition, human sexuality, cardiovascular functioning, and medical care.

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, and proper methods of transportation, splinting, and bandaging. Successful completion (A or B grade) of course leads to a Red Cross Responding to Emergencies, First Aid and Community CPR Certification.

HE-255 Body & Alcohol
3 credits, Fall/Winter/Spring
Covers beverage alcohol as a drug. Course focuses on physiological and psychological effects of alcohol use on the user; the impact of that use on those around the user and on society at large; the genetics of alcoholism; and the history of addiction treatment and the formation of Alcoholics Anonymous.

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. Bloodborn 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.

HE-277 The Health Coach
3 credits, not offered every year
A focus on the psychological aspects of weight management, as well as more in-depth coverage of the physiology of obesity and the techniques of lifestyle coaching. Students will be prepared to take the ACE certified Health Coach exam with successful completion of the course.

HE-280 Health/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. This course is intended to provide the student with learning experience related to his/her career goal(s) in the health-related career fields. Supervision and evaluation of the student's job performance will be provided by a qualified staff member at Clackamas and the supervisor of the employing institution. Students are required to take an online CWE seminar at the beginning of the term. Corequisite: CWE-281. Required: Instructor consent.

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.

HOR

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Horticulture/ Arboriculture/ Landscape/Organic Farming

Many horticulture classes will transfer as Lower Division Collegiate (LDC) credits to Oregon State University.
For additional information contact the Horticulture Department, 503-594-3292.

HOR-111 Horticulture Practicum/Fall
2 credits, Fall
Practical experience with seasonal horticulture activities in the areas of container & field nurseries, greenhouses, landscape management and organic food production. Class includes a lab component.

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. Class includes a lab component. 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-114 Garden Design
1 credit, not offered every year
Introductory course for students to gain understanding and skills in the area of planning landscape garden areas, including drawing skills to express ornamental garden schemes.

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 Crops-Potted Plants
3 credits, Fall
Environmental influences on plant growth, crop scheduling, greenhouse structures and equipment. Emphasis on foliage and flowering potted plant production. Class includes a lab component.

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, Fall term alternate years
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, Spring term alternate years
Methods used in building water features with emphasis placed on design, material selection, construction and maintenance considerations. Class includes a lab component.

HOR-127 Landscape Lighting
1 credit, Spring term alternate years
Methods used with lighting in the residential landscape, with emphasis placed on design, material selection, installation and maintenance considerations. Class includes a lab component.

HOR-128 Landscape Stones & Pavers
1 credit, Spring term alternate years
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. Class includes a lab component.

HOR-129 Landscape Decks & Fences
1 credit, Spring term alternate years
Methods used in building wood fences and decking with emphasis placed on design, material selection, construction and maintenance considerations. Class includes a lab component.

HOR-130 Plant Propagation Theory
3 credits, Winter
Covers plant anatomy and reproduction techniques of plants from seed, cuttings, grafting, division, and micropropagation. 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 horticulture activities in the areas of container and field nurseries, greenhouses, and landscape management. Class includes a lab component.

HOR-134 Herb Growing & Gardening
1 credit, Winter
Study of herb plant propagation and garden use. Garden culture and design are covered.

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 Crops-Bedding Plants
3 credits, Spring
Detailed study of environmental influences on individual crops, their requirements, scheduling, including annual, biennial, and perennial plant production. Class includes a lab component.

HOR-143 Horticulture Practicum/Spring
2 credits, Spring
Practical experience with seasonal horticulture activities in the areas of container and field nurseries, greenhouses and landscape management. Class includes a lab component.

HOR-144 Basic Pruning
1 credit, Winter
Why and how to prune trees, shrubs, and vines. Covers tools used for various pruning practices. Class includes a lab component.

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 and 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-149 Aquaponics
1 credit, Spring
Aquaponics is a food production system that combines aquaculture with hydroponics. A variety of systems will be evaluated, so students can decide which is most appropriate for their scale, interests, and intentions. Topics include greenhouse environment, system components, fish species selection and health, water quality management, vegetable crops selection, and how to meet the nutritional needs of plants with fish waste. This class includes a lab component.

HOR-180 Career Development Internship
1 credit, not offered every year
The internship is an opportunity to develop entry level skills in a specific occupational area and to practice the basic career management skills necessary to obtain, sustain, and advance employment. A Training and Evaluation Plan is developed and managed in consultation with the student, internship supervisor, and faculty. This course is not applicable towards Horticulture AAS degree.

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, Fall term alternate years
Develop skills with Computer-Aided Design (CAD) software for creating landscape designs. Practice techniques utilized in common CAD programs used in the landscape industry. Class includes a lab component. Prerequisites: Pass CS-091 or placement in CS-120; and pass HOR-229 or instructor consent.

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 agricultural industries. 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. Prerequisite: Pass CS-091 or placement in CS-120; or instructor consent.

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. Class includes a lab component.

HOR-225 Arboriculture I
3 credits, Winter
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
3 credits, Fall
Identification of deciduous trees, shrubs, and groundcovers, including their cultural requirements in the landscape. Class includes a lab component. Oregon State University transfer course.

HOR-227 Plant Identification/Winter
3 credits, Winter
Identification of conifers and broad-leaved evergreens, shrubs, and groundcovers, including their cultural requirements in the landscape. Class includes a lab component. Oregon State University transfer course.

HOR-228 Plant Identification/Spring
3 credits, Spring
Identification of flowering trees, shrubs, and groundcovers, including their cultural requirements in the landscape. Class includes a lab component. Oregon State University transfer course.

HOR-229 Introduction to Landscape Design
3 credits, Winter term alternate years
Introduction to landscape planning, including basic drafting skills, grading, drainage, and site planning. Class includes a lab component.

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 & Drainage Design
3 credits, Winter
Principles of irrigation and drainage system design for various situations, including underground and above-ground, residential and commercial systems. Class includes a lab component.

HOR-232 Commercial Floral Design
3 credits, not offered every year
Learn design techniques used by florists today 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, three, and four 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. Class includes a lab component. Prerequisite: Pass HOR-229 or instructor consent.

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. Class includes a lab component.

HOR-240 Irrigation & Drainage Practices
3 credits, Spring
Materials, equipment, and methods used to install irrigation and drainage systems in landscape areas. Emphasis is on home lawns, gardens, and larger areas. Class includes a lab component.

HOR-241 Nursery Management
3 credits, Fall term alternate years
Essentials of nursery practices, including containers and field growing practices, crop scheduling, management, and marketing.

HOR-242 Plant Propagation/Spring
2 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, Winter term alternate years
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, Summer
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 Arrangers Garden/Spring
2 credits, not offered every year
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 Western Herbs
2 credits, Fall
This course introduces students to herbs, some of which may be grown locally. Instruction will focus on the components of herbs and uses of each specific herb.

HOR-251 Herbal Products
1 credit, Winter
Instruction in making herbal teas, skin lotion, tincture, infused oil, vinegar, spritzers and herbal mixes. Further instruction in what specific ingredients to use, how to use them properly, and why each is important. This class includes a lab component.

HOR-252 Kitchen Herbs
1 credit, Spring
Instruction will focus on how to use common herbs, and spices in a variety of edible forms. Class includes a lab component.

HOR-260 Arboriculture II
3 credits, Fall
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: Pass HOR-225 or instructor consent.

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: Pass HOR-216, HOR-225, HOR-236, and HOR-237; or instructor consent. Corequisites: HOR-120.

HOR-262 Aerial 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. Class is a lab. Prerequisites: Pass HOR-145, HOR-131, and HOR-239; or instructor consent.

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: Pass HOR-115, HOR-120, HOR-131, HOR-216, HOR-236, and HOR-237; or instructor consent.

HOR-264 Aerial Treework Practicum II
2 credits, Winter
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. Class is a lab. Prerequisites: Pass HOR-262 or instructor consent.

HOR-280 Horticulture/CWE
3 credits, Fall/Winter/Spring/Summer
On-the-job experience in the student's major courses of study. Students are allowed to enroll after completing nine credits of horticulture courses. May be repeated for up to 6 credits. Corequisite: CWE-281 seminar. Required: Students expected to work a minimum of 108 job-site hours.

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. Corequisite: CWE-281 seminar. Required: Students expected to work a minimum 216 job-site hours.

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. Corequisite: CWE-281 seminar. Required: Students expected to work a minimum of 108 job-site hours.

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. Co-requisite: CWE-281 seminar. Required: Students expected to work a minimum of 108 job-site hours.

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. Co-requisite: CWE-281 seminar. Required: Students expected to work a minimum of 108 job-site hours.

HPD

Courses with this prefix do not transfer to a four-year institution. Courses are intended to maintain or upgrade current certification/licensure or to acquire, or renew professional certifications.

Healthcare Professional Development

XHPD-C001 CPR-Initial
0.6 CEU, Fall/Winter/Spring/Summer
American Heart Association (AHA) Healthcare Provider CPR class. For initial training of AHA Healthcare Provider (Level C) CPR card.

HPD-101 Phlebotomy for Healthcare Professionals

1 credit, not offered every term

This course is designed to instill a basic understanding of blood collection and specimen handling techniques used in ambulatory and medical center laboratories. Patient and personal safety techniques using Universal and Standard precautions will be observed and required for success in the course. Emphasis will also be placed on professionalism in the workplace. The students will collect blood samples on their lab partners through-out the term. Requirements: Students must fulfill one of the following: by concurrently enrolled in EMT-102; have successfully completed NRS-110; have a current CNA2 Certificate; be certified EMT basic; or have an RN license.

HS

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Human Services

HS-100 Introduction to Human Services

3 credits, Fall

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 for Human Services Generalist degree.

HS-103 Ethics for Human Service Workers

2 credits, Winter/Summer

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-130 Introduction to Hospice Care

3 credits, not offered every term

For individuals, families and professionals interested in learning about Hospice care for the terminally ill. Issues include death, dying and bereavement; psycho-social needs; pain and symptoms control; delivery of medical care; family dynamics; and philosophical and ethical questions. Required to become a Hospice Volunteer. Recommended: For Gerontology or Allied Health students. Required: Must be at least 18 years of age to attend. Instructor consent.

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 Introductory Interviewing Skills

3 credits, 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-160 Introduction to Victim Advocacy

4 credits, not offered every term

This basic course will teach skills to work with a diverse array of crime victims. Course will cover the history of victim rights in Oregon and the US, and current policies and practices.

HS-165 Activity Programs in Long Term Care Facilities

3 credits, not offered every term

Provides training for activity professionals in long-term care and residential facilities. Focuses on creating person-centered programs that provide meaningful 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.

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. Prerequisites: HS-100 or HS-154. Required: Instructor consent.

HS-211 HIV, TB, and Infectious Diseases

1 credit, Winter/Summer

This course will explore the relationship between substance abuse and infectious diseases, and discuss methods for reducing transmission of these diseases. Topics will include HIV/AIDS, tuberculosis, hepatitis, and sexually transmitted infections. 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, 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.

HS-217 Helping Skills & Diverse Populations

2 credits, not offered every year

Addresses the helping skills necessary to provide career services in a multicultural world. Part of a series toward earning a Global Career Development Facilitator credential endorsed by the National Career Development Association.

HS-218 Career Development Models & Assessments

2 credits, not offered every year

Addresses career development models and career assessment tools. Part of a series toward earning a Global Career Development Facilitator credential endorsed by the National Career Development Association.

HS-219 Training Clients/Peers & Employability Skills
2 credits, not offered every year
Addresses the skills needed to train and work with groups, as well as clients' employability issues. Part of a series toward earning a Global Career Development Facilitator credential endorsed by the National Career Development Association.

HS-220 Labor Market Information & Technology in Care
2 credits, not offered every year
Addresses the role information and technology plays in career planning and advancement. Part of a series toward earning a Global Career Development Facilitator credential endorsed by the National Career Development Association.

HS-221 Ethics and Consultation
2 credits, not offered every year
Addresses the ethical considerations and consultation practices in the field of career development and career advancement. Part of a series toward earning a Global Career Development Facilitator credential endorsed by the National Career Development Association.

HS-222 Program Management & Public Relations
2 credits, not offered every year
Plan, design, implement, and market services in the field of career development and/or career advancement. Part of a series toward earning a Global Career Development Facilitator credential endorsed by the National Career Development Association.

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. Prerequisite: Completion of HS-156 with a C or better; or instructor consent.

HS-260 Victim Advocacy & Assistance
4 credits, Fall/Spring
Provides skills for working with a diverse group of crime victims, including, but not limited to, victims of homicide, sexual assault, child abuse and domestic violence. Topics include: theories of victimology, victim's rights evolution, crisis intervention, stress reactions and post-traumatic stress syndrome.

HS-280 Human Services Generalist I: CWE/ Practicum
2-6 credits,
Fall/Winter/Spring/Summer
Cooperative work experience. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology; and other occupations. May be repeated for up to 12 credits. Recommended: CWE is for students who have completed at least one year of the Human Services Generalist curriculum. Prerequisite: HS-170 (except Career Development Facilitator certificate students). Corequisite: CWE-281. Required: Instructor consent.

HS-281 Human Services Generalist II: CWE/ Practicum
2-6 credits,
Fall/Winter/Spring/Summer
Cooperative work experience level II. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology; and other related occupations. May be repeated for up to 12 credits. Prerequisite: HS-170. Corequisite: CWE-281. Required: Instructor consent.

HS-282 Human Services Generalist III: CWE/ Practicum
2-6 credits,
Fall/Winter/Spring/Summer
Cooperative work experience level III. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology, and other related occupations. May be repeated for up to 12 credits. Prerequisite: HS-170. Corequisite: CWE-281. Required: Instructor consent.

HST
History

HST-101 History of Western Civilization
4 credits, Fall/Winter
Origins and development of Western Civilization with a primary focus on Europe from ancient times to ca. 1300. Recommended: Pass WRD-090 or placement in RD-115.

HST-102 History of Western Civilization
4 credits, Winter/Spring
Origins and development of Western Civilization with an emphasis on Europe from ca. 1300 to 1800. Recommended: Pass WRD-090 or placement in RD-115.

HST-103 History of Western Civilization
4 credits, Fall/Spring
Development of Western Civilization with an emphasis on Europe from the 19th century to the present. Recommended: Pass WRD-090 or placement in RD-115.

HST-130 Oddballs & 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. Recommendation: Pass WRD-090 or placement in RD-115.

HST-131 History of Crime and Punishment in Western Civilization
4 credits, not offered every term
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: Pass WRD-090 or placement in RD-115.

HST-132 History of Language & 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: Pass WRD-090 or placement in RD-115.

HST-136 History of Popular Culture, Entertainment & Sports
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: Pass WRD-090 or placement in RD-115.

HST-137 History of Science, Medicine & Technology
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: Pass WRD-090 or placement in RD-115.

HST-138 History of Love, Marriage & the Family
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: Pass WRD-090 or placement in RD-115.

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. Recommended: Sequence of HST-201, HST-202 and HST-203 is taken in order. Prerequisites: Previous completion of or current enrollment in WRD-098 or placement in RD-115. Recommended: Sequence of HST-201, HST-202, and HST-203 are 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: Sequence of HST-201, HST-202 and HST-203 is taken in order Prerequisites: Previous completion of or current enrollment in WRD-098 or placement in RD-115. Recommended: Sequence of HST-201, HST-202, and HST-203 are taken in order

HST-203 History of the United States
4 credits, Spring
Covers the period of United States history since WWI. Recommended: Sequence of HST-201, HST-202 and HST-203 is taken in order. Prerequisites: Previous completion of or currently enrollment in WRD-098 or placement in RD-115. Recommended: Sequence of HST-201, HST-202, and HST-203 are taken in order

HST-210 The Great Depression & New Deal in America
4 credits, not offered every year
Explores the contours of the Great Depression and New Deal in American history. Course includes an examination of economic, political, social, and cultural factors and forces at play in America during the Depression era (1929-1941) with an emphasis on the New Deal and its successes, failures, and legacy. Prerequisites: Previous completion of or current enrollment in WRD-098 or placement in RD-115; or instructor consent.

HST-220 Introduction to Oral History
4 credits, not offered every year
Course covers the origins and development of Oral History as an academic discipline, with explorations of key Oral History documents and projects over the last century. Prerequisites: Previous completion of or current enrollment in WRD-098 or placement in RD-115; or instructor consent.

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. Corequisites: CWE-281. Required: Instructor consent.

HUM
Humanities

HUM-160 Faith & Reason
5 credits, Fall/Winter/Spring
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: Pass WRD-090 or placement in RD-115.

HUM-180 Pathway to Sustainability
5 credits, Fall
Can we create a more sustainable and just world? We will question our assumptions regarding economic models, democracy, our relationships with the environment, as well as our social structure by examining the roots of the current ecological crisis. Recommended: Pass WRD-098 or placement in WR-121.

HUM-181 Pathway to Sustainability
5 credits, Winter
Can we create a more sustainable and just world? How do socially meaningful changes come about? What are the ecological and social repercussions of the choices we make? Are ecological and social justice concerns linked? This class will explore these questions and others pertaining to current issues in sustainability research and writing. Recommended: Pass WRD-098 or placement in WR-121.

HUM-182 Pathway to Sustainability
5 credits, Spring
Can we create a more sustainable and just world? What can our personal roles in change be? How can we stimulate local sustainable economies? What analysis is useful in assessing ecological impacts? This third class in the Pathways to Sustainability sequence will explore how personal choices affect larger global issues. Recommended: Pass WRD-098 or placement in WR-121.

HUM-231 Engendered Identities
4 credits, not offered every year
Examines the various perspectives on the development of gender identities and looks specifically at the ways in which concepts of femininity and masculinity have shaped cultural images, identities and experiences cross-culturally, globally and historically. Prerequisites: Previous completion of or current enrollment in WRD-098 or placement in RD-115; or instructor consent.

HUM-233 Electronic Culture
4 credits, Spring
An introduction to the interdisciplinary field of electronic culture, focusing on the use of electronic computer technology by individuals and groups. Examines transformation of self, identity, communication, and development of electronic communities and subcultures. Recommended: Pass WRD-098 or placement in WR-121.

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. Prerequisite: Previous completion of or current enrollment in WRD-098 or placement in RD-115; or instructor consent.

HUM-240 American Military Conflict: Wars of National Identity
4 credits, Fall
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: Pass WRD-098 or placement in WR-121.

HUM-241 American Military Conflict: Global War
4 credits, Winter
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: Pass WRD-098 or placement in WR-121.

HUM-242 American Military Conflict: Asymmetric Warfare
4 credits, Spring
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: Pass WRD-098 or placement in WR-121.

IMT

CONV/Industrial Orient

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.

J

Journalism

J-134 Photojournalism
4 credits, Fall
Introduces the student to photojournalism, emphasizing composition, lighting and creative ways to illustrate a news story through weekly shooting assignments. Recommended: Basic photography skills.

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, newspapers, 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. Required for journalism majors at the University of Oregon. Recommended: Pass WRD-098 or placement in WR-121.

J-215 College Newspaper Lab: Writing and Photography
1-3 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 up to 9 credits. Recommended: Placement in WR-121.

J-216 Writing for Media
4 credits, Fall
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 print, broadcast, the web and social media. Recommended: Pass WRD-098 or placement in WR-121.

J-220 Introduction to Broadcast Journalism
4 credits, Winter
Offers students interested in Broadcast Journalism the basic skills of writing, reporting, and camera operation for broadcast. Lab component included. Recommended: Pass WRD-098 or placement in WR-121.

J-221 Broadcast Journalism
4 credits, Winter
Offers students interested in Broadcast Journalism intermediate skills of broadcast reporting, videography, editing, compression, and uploading for broadcast. Lab component included. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass J-220 with C or better, or instructor consent.

J-222 Advanced Broadcast Journalism
4 credits, Winter
Offers students interested in Broadcast Journalism advanced skills of managing reporters, videographers, and a web presence in a broadcast newsroom. Lab component included. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass J-221 with C or better, or instructor consent.

J-226 Introduction to College Newspaper: Design & Production
4 credits, Fall/Winter/Spring
Offers students interested in newspaper design and production basic skills in writing headlines, designing pages and using Adobe InDesign software to produce the weekly student newspaper, The Clackamas Print. 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 newspaper and web design intermediate skills in writing, lay out, photo editing and Adobe InDesign to produce and publish the weekly student newspaper, The Clackamas Print and its website. May be repeated for up to 8 credits. Recommended: Placement in WR-121. Prerequisite: J-226.

J-228 Advanced College Newspaper: Design & Production
4 credits, Fall/Winter/Spring
Offers students interested in newspaper design and production advanced skills in news content design, alternative story formats, content flow and management for print and online. Students will produce and publish the weekly student newspaper, The Clackamas Print, and its website. May be repeated for up to 8 credits. Recommended: Placement in WR-121. Prerequisite: J-227.

J-280 Journalism/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. Provides the student with on-the-job experience and training related to journalism. Corequisite: CWE-281. Required: Instructor consent.

J-280A Public Relations/CWE
2-6 credits, Fall/Winter/Spring
Provides the student with on-the-job experience and training related to public relations. Corequisite: CWE-281. Required: Instructor consent.

LIB

Library

LIB-101 Introduction to Library Research
1 credit, Fall/Winter/Spring
Trains students in the use of a variety of print and electronic information resources, search tools, and source citation. Excellent preparation for term papers and other research assignments. Recommended: Pass CS-090 or equivalent experience.

MA

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Medical Assistant

MA-110 Medical Terminology
3 credits, Fall/Winter/Spring/Summer
Provides the foundational principles required for understanding medical terms and tools to effectively communicate with other health care professionals. This includes pronunciation, spelling and the meaning of words. There will be introductions to disease processes and basic anatomy and physiology by examining each of the body systems. Open to all students. Required course for students in Medical Assistant program.

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. Prerequisite: Pass MA-110, and WR-101 or WR-121. Corequisites: BI-120 and MA-145. Required: Instructor consent and student must be enrolled in current Medical Assistant cohort.

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. This course may not be challenged. Prerequisites: Pass MA-116, MA-117, MA-117L, MA-118, MA-118L, MTH-054. Corequisite: MA-115L, MA-119, MA-121, MA-121L. Required: Instructor consent and student must be enrolled in current Medical Assistant cohort.

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. This course may not be challenged. Prerequisites: Pass MA-116, MA-117, MA-117L, MA-118, MA-118L, MTH-054. Corequisites: MA-115, MA-119, MA-121, MA-121L. Required: Instructor consent and student must be enrolled in current Medical Assistant cohort.

MA-116 Introduction to Medications
3 credits, Winter
Introduces the medical assisting students to pharmacology and medication administration. It is designed to give students the fundamentals of medications and the administration of medications essential to the practice of medical assisting. Prerequisites: Pass BI-120, MA-110, MA-112 and MA-145. Corequisites: MA-117, MA-117L, MA-118, MA-118L, MTH-054. Required: Instructor consent and student must be enrolled in current Medical Assistant cohort.

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 blood born disease transmission and scope of practice will be emphasized. First course of the Clinical Laboratory Procedures series. Prerequisites: Pass BI-120, MA-112 and MA-145. Corequisites: MA-116, MA-117L, MA-118, MA-118L and MTH-054. Required: Instructor consent and student must be enrolled in current Medical Assistant cohort.

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 blood born disease transmission and scope of practice will be emphasized. This is the first course in the Clinical Lab Procedures series. Prerequisites: Pass BI-120, MA-112, MA-145. Corequisites: MA-117, MA-118, MA-118L, MA-116, MTH-054. Required: Instructor consent and student must be enrolled in current Medical Assistant cohort.

MA-118 Examination Room Techniques
3 credits, Winter
Fundamental theory focusing on the clinical competencies involved in ambulatory care, exam room procedures and related techniques. Special emphasis will be placed on essential principles of diagnostic testing, patient care, documentation and general (trans disciplinary) competencies including the rationale for the equipment used in medication administration and the techniques for oral and parenteral medication administration (excluding IV). Prerequisites: Pass BI-120, MA-112 and MA-145. Corequisites: MA-116, MA-117, MA-117L, MA-118L and MTH-054. Instructor consent and student must be enrolled in current Medical Assistant cohort.

MA-118L Examination Room Techniques Lab
1 credit, Winter
Fundamental skills which focus on the clinical techniques and competencies (psychomotor & affective) involved in quality exam room patient care and provider support. Special emphasis will be placed on the principles and skills of common diagnostic tests, currently accepted techniques for and equipment used in medication administration (oral/parenteral; excluding IV administration), patient care and interaction, and accurate documentation. This course provides a basis for critical thinking skills in the ambulatory setting. Prerequisites: Pass BI-120, MA-112 and MA-145. Corequisites: MA-116, MA-117, MA-117L, MA-118 and MTH-054. Required: Instructor consent and student must be enrolled in current Medical Assistant cohort.

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. Prerequisites: Pass MA-116, MA-117, MA-117L, MA-118, MA-118L. Corequisites: MA-115, MA-115L, MA-121, and MA-121L. Required: Instructor consent and student must be enrolled in current Medical Assistant cohort. Student must complete and pass all required curriculum, pass criminal history background check and urine drug/alcohol screen in order to be placed in a practicum site.

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. Prerequisites: Pass MA-116, MA-117, MA-117L, MA-118, MA-118L, MTH-054. Corequisites: MA-115, MA-115L, MA-119, MA-121L. Required: Instructor consent and student must be enrolled in current Medical Assistant cohort.

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 blood born disease transmission and scope of practice will be emphasized. Prerequisites: Pass MA-116, MA-117, MA-117L, MA-118, MA-118L, MTH-054. Corequisites: MA-115, MA-115L, MA-119, MA-121. Required: Instructor consent and student must be enrolled in current Medical Assistant cohort.

MA-145 Insurance & Health Information Management
3 credits, Fall
Introduces the medical assisting students to learn practical applications of 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. Prerequisite: Pass MA-110, WR-101 or WR-121. Corequisites: BI-120, MA-112 Required: Instructor consent and student must be enrolled in current Medical Assistant cohort.

MET

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business

Mechanical Engineering Technology

For additional information contact the Manufacturing Department at 503-594-3318.

MET-112 Introduction to Engineering and Technical 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-PLTW
6 credits, not offered every term
Helps students understand the field of engineering/engineering technology. Explores various technology systems and manufacturing 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-151 Introduction to Engineering Design-PLTW
6 credits, not offered every term
Emphasizes problem-solving skills by using a design development process. Models of product solutions are created, analyzed and communicated using solid modeling computer design software. This course is part of the national Project Lead the Way curriculum.

MET-152 Digital Electronics-PLTW
6 credits, not offered every term
Covers applied logic that encompasses the application of electronic circuits and devices. Uses computer simulation software to design and test digital circuitry prior to the actual construction of circuits and devices. This course is part of the national Project Lead The Way curriculum.

MET-153 Computer-Integrated Manufacturing-PLTW
6 credits, not offered every term
Applies the principles of robotics and automation to engineering and manufacturing. Students use CNC equipment to produce actual models of their three-dimensional designs. 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.

MET-211 Statics
4 credits, not offered every term
Application of the fundamental principles of mechanics of rigid bodies to typical engineering problems involving force systems in static equilibrium, moments and couples, structures, vector algebra, distributed forces, friction, center of gravity, center of mass and area moment of inertia. Prerequisites: MTH-111 or instructor consent.

MET-213 Strength of Materials
4 credits, not offered every term
This course introduces the mechanics of deformable bodies with an emphasis on principles of stress and strain, failure criteria and design concepts. Covers simple bending of beams and associated deflections; shear stresses in trusses, beams and frames; combined stresses due to bending, torsion, shear and axial loads. Additional topics include transformation of stress, principle stresses, Mohr's circle, stability and buckling. Prerequisites: MET-211 or instructor consent.

MFG

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Manufacturing Technology

The Manufacturing Department has a variety of programs and classes. For additional information contact the Manufacturing Department at 503-594-3318.

MFG-103 Machining for the Fabrication and Maintenance Trades
3 credits, Fall/Winter/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. Recommended: MTH-050.

MFG-104 Print Reading
2 credits, Fall/Winter/Spring/Summer
Introduction to basic print reading. Students will use the principles of orthographic projection and current ASME standards as they apply this knowledge to interpreting manufacturing prints.

MFG-105 Dimensional Inspection
2 credits, Summer/Winter
Covers precision measuring tools such as micrometers, dial indicators, gauge blocks, sine bars and other instruments used in quality control of manufactured products. Prerequisite: MFG-104 or instructor consent.

MFG-106 Applied Geometric Dimensioning & Tolerancing for Manufacturing
3 credits, Fall/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. Prerequisite: MFG-104 or instructor consent.

MFG-107 Industrial Safety & First Aid
3 credits, Fall/Winter/Spring/Summer
Industrial Safety 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 Red Cross first aid, AED and CPR.

MFG-109 Computer Literacy for Technicians
3 credits, Fall/Winter/Spring/Summer
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/Summer
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. May be repeated for up to 9 credits. Required: Instructor consent.

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: covers machine tool operations including drill presses, lathes and milling machines. Includes internal and external threading. May be repeated for up to 9 credits. Corequisite: MTH-050 and MFG-104. Recommended: Completion of MFG-107.

MFG-112 Machine Tool Fundamentals II
3-9 credits,
Fall/Winter/Spring/Summer
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. May be repeated for up to 9 credits. Prerequisite: 6 credits of MFG-111 or instructor consent.

MFG-113 Machine Tool Fundamentals III
3-9 credits,
Fall/Winter/Spring/Summer
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. May be repeated for up to 9 credits. Prerequisite: 6 credits of MFG-112 or instructor consent.

MFG-123 Instrumentation and Controls
3 credits, Winter
This course is intended to provide the industrial maintenance technician with knowledge and skills in the areas of process measurement, control and data acquisition. Students will become familiar with common sensors and actuators and their applications. Recommended: Completion of MFG-130 or EET-137.

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: Completion of 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: Completion of MFG-130 and MFG-131.

MFG-133 Programmable Logic Controllers
3 credits, Spring
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: Completion of MFG-130.

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: Pass MTH-050.

MFG-201 CNC I: Set-up & Operation
4 credits, Fall/Spring
A hands-on class will teach students how to set-up and operate CNC milling centers. Includes an introduction to G&M-code programming. Designed for persons with little or no previous experience. Prerequisite: 3 credits of MFG-112, completion of MTH-080 and MFG-109; or instructor consent. Recommended: Completion of MFG-109, MFG-112 and MTH-050.

MFG-202 CNC II: Programming & Operation
4 credits, Winter/Summer
Places a heavy emphasis on writing G&M machine codes. Students are taught more advanced programming and operation of CNC milling centers and basic programming, set-up and operation of CNC turning centers. Prerequisite: Pass MFG--201 or instructor consent.

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. Introduction to principles and operation of EDM included. Prerequisite: Pass MFG-202. Recommended: Completion of MFG-201 or MFG-204.

MFG-204 Computer-Aided Manufacturing I
4 credits, Fall/Spring
This course is an introduction to computer-aided part creation, and programming. Students will use CAD/CAM software to generate NC code to produce machined products. Model creation, process verification, code generation, and CAD/CAM integration will be covered. Prerequisite: 3 credits of MFG-112, completion of MTH-080 and MFG-109. Pre or co-requisite: MFG-201. Required: Completion of MFG-109.

MFG-205 Computer-Aided Manufacturing II
4 credits, Winter/Summer
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. Prerequisite: MFG-204.

MFG-206 Computer-Aided Manufacturing III
3 credits, Fall/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 and 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: Completion of 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. May be repeated for up to 4 credits. Recommended: Completion of MFG-201 and MFG-204. (May be taken concurrently with MFG-204).

MFG-211 Machine Tool Fundamentals IV
6 credits, Fall/Winter/Spring/Summer
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. Prerequisite: 6 credits of MFG-113 or instructor consent.

MFG-219 Robotics
3 credits, Spring
An introduction to robotics and industrial motion control. Students will be exposed to the operation, programming and applications of a typical FANUC, six-axis industrial robot. Hands-on activities will include manual tech programming, testing with simulation software and programming of advanced movements. Recommended: MTH-050 and MFG-209.

MFG-221 Materials Science
3 credits, Fall/Winter/Spring
Introduces metallurgy and material science. Extractive and physical metallurgy will be covered. Specific topics include heat treatment, materials analysis, the iron carbon phase diagram, composites, ceramics and industrial plastics.

MFG-271 Mastercam Mill I
4 credits, Fall
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, Winter
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: Completion of MFG-271 or prior experience.

MFG-273 Mastercam Lathe/Mill/Multi-Axis
4 credits, Spring
The fundamentals of Mastercam Lathe and mill/turn toolpaths and provides demonstrations and exercises on new and current programming techniques for advanced mill/turn machining centers. Additionally, the strategic use of multi-axis documentation and set-up sheets will be provided. Some student projects will be machined on state-of-the-art equipment in the advanced manufacturing lab. Prerequisites: MFG-272 or instructor consent.

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. May be repeated for up to 6 credits. Co-requisite: CWE-281 Required: Instructor consent.

MTH
Mathematics

MTH-010 Fundamentals of Arithmetic I
4 credits, Fall/Winter/Spring/Summer
Reviews operations on whole numbers, elementary fraction concepts, operations on decimals, and measurement.

MTH-020 Fundamentals of Arithmetic II
4 credits, Fall/Winter/Spring/Summer
Topics include factors and multiples, operations on fractions, percents, ratios and proportions, powers and square roots, introduction to graphs, signed numbers, and effective study skills. Prerequisite: Pass MTH-010 with a C or better or placement in MTH-020; or instructor consent.

MTH-050 Technical Mathematics I
3 credits, Fall/Winter/Spring/Summer
Designed for career-technical students. Topics focus on critical thinking, problem solving, and mathematical communication using applications in applied arithmetic, measurement, geometry, and statistics and probability. Prerequisite: Pass MTH-020 with a C or better or placement in MTH-050 or MTH-060; or instructor consent.

MTH-054 Medical Calculations for Medical Assistants
4 credits, Winter
Topics include problem solving, ratios and proportions, percents, accuracy and precision of metric, apothecary and household systems of measurement and calculating medication doses. Required: Instructor consent. Prerequisite: Pass MTH-020 with a C or better or placement in MTH-060. This course cannot be waived.

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, and linear graphing are explored numerically, symbolically, graphically, and verbally. Prerequisite: Pass MTH-020 with a C or better or placement in MTH-060; or instructor consent.

MTH-065 Algebra II
4 credits, Fall/Winter/Spring/Summer
A second term of topics in algebra. This course continues the exploration of expressions, equations, and inequalities numerically, symbolically, graphically, and verbally Prerequisite: Pass MTH-060 with a C or better or placement in MTH-065; or instructor consent.

MTH-080 Technical Mathematics II
3 credits, Fall/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. Prerequisite: Pass MTH-050 with a C or better or instructor consent.

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. Prerequisite: Pass MTH-065 or instructor consent, or placement in MTH-080 or MTH-095. Corequisite: WET-110. This course cannot be waived.

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. Prerequisite: Pass MTH-065 or instructor consent, or placement in MTH-080 or MTH-095. Corequisite: WET-111. This course cannot be waived.

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. Prerequisite: Pass MTH-082A, MTH-082B or instructor consent. Corequisite: WET-120. This course cannot be waived.

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. Prerequisite: Pass MTH-082A, MTH-082B or instructor consent. Corequisite: WET-121. This course cannot be waived.

MTH-082E Math for High Purity Water
1 credit, not offered every year
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.

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. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-095; or instructor consent.

MTH-098 College Math Foundations
5 credits, Fall/Winter/Spring/Summer
Students in this course will solve realistic problems in order to improve their critical-thinking abilities, number sense, and estimation skills. The course covers such topics as proportional reasoning, creating and analyzing visual representations in mathematics and statistics, problem-solving strategies, properties of numerical operations, linear functions, and calculator computations. Emphasis will be placed on relevance, context, and technical communication, including written descriptions of concepts and procedures. Prerequisites: Pass MTH-020 with a C or better or placement in MTH-050, MTH-060, or MTH-098, or instructor consent.

MTH-105 Introduction to Contemporary Math
4 credits, Fall/Winter/Spring/Summer
A transfer-level mathematics course for non-science majors. The topics covered in this course focus students on critical thinking, problem solving, and mathematical communication. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-095 or MTH-098 with a C or better or placement in MTH-105 or MTH-111; or instructor consent.

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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-095 with a C or better or placement in MTH-111; or instructor consent.

MTH-112 Trigonometry/Pre-Calculus
5 credits, Fall/Winter/Spring/Summer
A transfer course designed to prepare students for calculus. AMATYC standards-based approach utilizing the rule of four to analyze elementary functions and applications is used for this course. The rule of four requires that each topic should be presented symbolically, graphically, numerically, and verbally. Topics include trigonometric functions, trigonometry developed from the unit circle, right triangle trigonometry, inverse trigonometric functions, the laws of sines and cosines, trigonometric identities, and conic sections. Students will also learn to use vectors, polar equations, and parametric equations. Particular attention will be paid to modeling applications and solving mathematical problems. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-111 with a C or better or placement in MTH-112; or instructor consent.

MTH-205 A Bridge to University Mathematics
3 credits, Winter
This is a "bridge course" designed to help students transition from computation-based mathematics to the more proof-based curriculum typical of junior-senior collegiate mathematics-level courses. Topics include: group theory, elementary set theory, proof, and argumentation. Prerequisite: MTH-112 or MTH-251 with a C or better, or placement into MTH-251, or instructor consent.

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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-095 with a C or better or placement in MTH-111; or instructor consent.

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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-211 with a C or better or instructor consent.

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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-212 with a C or better or instructor consent.

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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-105, MTH-111, MTH-112 or MTH-251 with a C or better, or placement in MTH-112 or MTH-251, or instructor consent.

MTH-244 Statistics II
4 credits, Fall/Winter/Spring
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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-243 with a C or better; or instructor consent.

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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-112 with a C or better or placement in MTH-251; or instructor consent.

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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-251 with a C or better; or instructor consent.

MTH-253 Calculus III
5 credits, Winter/Spring
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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-252 with a C or better; or instructor consent.

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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-252 with a C or better; or instructor consent.

MTH-256 Differential Equations
4 credits, Winter/Summer
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. Recommended: Pass WRD-098 or placement WR-121. Prerequisite: Pass MTH-252 with a C or better; or instructor consent.

MTH-261 Linear Algebra
4 credits, Summer/Spring
This course is an introduction to linear analysis of n-space: systems of linear equations, vectors, matrices, matrix operations, linear transformations, linear independence, span, bases, subspaces, determinants, eigenvalues, eigenvectors, inner products, diagonalization, and applications of these topics. Recommended: Pass WRD-098 or placement in WR-121. Prerequisite: Pass MTH-252 with a C or better; or instructor consent.

MTH-280 Mathematics/CWE
2-6 credits, not offered every year
Cooperative work experience. Practical experience in teaching, tutoring or applying mathematics while supervised by a teacher or mathematician. May be repeated up to 12 credits. Corequisites: CWE-281. Requirements: Restricted to math lab tutors. Instructor consent.

MUP

Music Performance

XMUP-0001 Unistus Choir
0 credit, Fall/Winter/Spring/Summer
Select vocal ensemble which rehearses and performs choral music from the Renaissance to the 20th century, including the music of Estonia. Provides preparation for entering professional fields of music and performance. Emphasis on a cappella singing applied to appropriate chamber music. Provides an environment whereby individual students, selected according to their talents and attitudes, may assist the group at large in achieving its full potential which is that of excellence in choral expression. The achievement of this potential is our goal.

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.

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. May be repeated for up to 6 credits. No audition required. 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. Enrollment by audition. May be repeated for up to 6 credits. Recommended: For vocal music majors. 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.

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: Instructor consent.

MUP-150 Contemporary Music Ensemble
1 credit, Fall/Winter/Spring
Studies the development and performance of original compositions through intensive musical collaboration and creation. Recommended: Two terms of private study on primary instrument. Required: Must 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. Recommended: MUP-102 or MUP-122.

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. Corequisite: MUS-189. May be repeated for up to 10 credits.

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.

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: College level performance ability.

MUP-174 Individual Lessons: Voice
2 credits, Fall/Winter/Spring/Summer
College-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 10 credits.

MUP-174J Individual Lessons: Jazz Voice
2 credits, Fall/Winter/Spring/Summer
College-level private lessons required for to music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

MUP-175 Individual Lessons: Violin
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. Corequisite: MUS-189. May be repeated for up to 10 credits.

MUP-176 Individual Lessons: Viola
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. Corequisite: MUS-189. May be repeated for up to 10 credits.

MUP-177 Individual Lessons: Cello
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. Corequisite: MUS-189. May be repeated for up to 10 credits.

MUP-178 Individual Lessons: Bass
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. Corequisite: MUS-189. May be repeated for up to 10 credits.

MUP-178J Individual Lessons: Jazz Bass
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.

MUP-179 Individual Lessons: Harp
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. Corequisite: MUS-189. May be repeated for up to 10 credits.

MUP-180 Individual Lessons: Guitar
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. Corequisite: MUS-189. May be repeated for up to 10 credits.

MUP-180J Individual Lessons: Jazz Guitar
2 credits, Fall/Winter/Spring/Summer
College-level private lessons available to music majors and available to qualified non-majors. End-of-term juried performance mandatory. May be repeated for up to 10 credits.

MUP-181 Individual Lessons: Flute
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. Corequisite: MUS-189. May be repeated for up to 10 credits.

MUP-181J Individual Lessons: Jazz Flute
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.

MUP-182 Individual Lessons: Oboe
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. Corequisite: MUS-189. May be repeated for up to 10 credits.

MUP-183 Individual Lessons: Clarinet
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. Corequisite: MUS-189. May be repeated for up to 10 credits.

MUP-183J Individual Lessons: Jazz Clarinet
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.

MUP-184 Individual Lessons: Saxophone
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. Corequisite: MUS-189. May be repeated for up to 10 credits.

MUP-184J Individual Lessons: Jazz Saxophone
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.

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. Corequisite: MUS-189. May be repeated for up to 10 credits.

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. Corequisite: MUS-189. May be repeated for up to 10 credits.

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.

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. Corequisite: MUS-189. May be repeated for up to 10 credits.

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. Corequisite: MUS-189. May be repeated for up to 10 credits.

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.

MUP-189 Individual Lessons: Baritone
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. Corequisite: MUS-189. May be repeated for up to 10 credits.

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. Corequisite: MUS-189. May be repeated for up to 10 credits.

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. Corequisite: MUS-189. May be repeated for up to 10 credits.

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.

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. May be repeated for up to 6 credits. No audition required. Required: Completion of high school or high school performance level. Ability to read music and play a band instrument.

MUP-204 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-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. Recommended: MUP-102 and MUP-104.

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. Enrollment by audition. May be repeated for up to 6 credits. Recommended: For vocal music majors. 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 concurrently take either MUS-117 Sightreading, MUS-101, 102 or 103 Music Fundamentals or MUS-127, 128, or 129 Keyboard Skills I.

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. 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-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: Instructor consent.

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. Recommended: MUP-202 or MUP-222.

MUP-271 Individual Lessons: Piano
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Pre-requisite: MUS-171 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-271J Individual Lessons: Jazz Piano
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-171J (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-271R 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 6 credits. Required: College level performance ability.

MUP-274 Individual Lessons: Voice
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-174 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-274J Individual Lessons: Jazz Voice
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-174J (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-275 Individual Lessons: Violin
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-175 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-276 Individual Lessons: Viola
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-176 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-277 Individual Lessons: Cello
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-177 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-278 Individual Lessons: Bass
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-178 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-278J Individual Lessons: Jazz Bass
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-178J (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-279 Individual Lessons: Harp
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-179 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-280 Individual Lessons: Guitar
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-180 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-280J Individual Lessons: Jazz Guitar
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-180J (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-281 Individual Lessons: Flute
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-181 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-281J Individual Lessons: Jazz Flute
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-181J (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-282 Individual Lessons: Oboe
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-182 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-283 Individual Lessons: Clarinet
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-183 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-283J Individual Lessons: Jazz Clarinet
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-183J (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-284 Individual Lessons: Saxophone
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-184 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-284J Individual Lessons: Jazz Saxophone
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-184J (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-285 Individual Lessons: Bassoon
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-185 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-286 Individual Lessons: Trumpet
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-186 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-286J Individual Lessons: Jazz Trumpet
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-186J (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-287 Individual Lessons: French Horn
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-187 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-288 Individual Lessons: Trombone
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-188 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-288J Individual Lessons: Jazz Trombone
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-188J (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-289 Individual Lessons: Baritone
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-189 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-290 Individual Lessons: Tuba
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-190 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-291 Individual Lessons: Percussion
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-191 (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUP-291J Individual Lessons: Jazz Percussion
2 credits, Fall/Winter/Spring/Summer
Sophomore-level private lessons required for music majors and available to qualified non-majors. End-of-term juried performance mandatory. Prerequisite: MUP-191J (6 credits) or instructor consent. Recommended: MUP-104 or MUP-204. Required: College-level performance ability. May be repeated for up to 10 credits.

MUS
Music

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. Prerequisite: MUS-101 or instructor consent.

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. Prerequisite: MUS-102 or instructor consent.

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: Pass WRD-098 or placement in WR-121.

MUS-106 Audio Recording at Home
1 credit, Fall/Winter/Spring
An overview of the basic tools and techniques used in audio recording at home. Depending on participant needs, topics may include signal path, microphone applications, software, hardware, outboard gear, soldering techniques, tracking, mixing, and editing.

MUS-107 Introduction to Audio Recording I
3 credits, Fall/Winter/Spring/Summer
Introduction to the basic techniques and tools used in audio recording. Areas of study include signal path, microphone applications, software, hardware, outboard gear, tracking, mixing, and editing.

MUS-108 Introduction to Audio Recording II
3 credits, Fall/Winter/Spring
Exploration of techniques and tools used in audio recording. Analog, digital, and hard drive recording will be explored. Areas of study include multi-tracking, signal path, microphone applications, software, hardware, outboard gear, soldering techniques, tracking, mixing, and editing. Software/hardware includes ProTools, ADAT, Mackie, etc. Prerequisite: 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. Prerequisite: Pass MUS-108 or instructor consent.

MUS-111 Music Theory I
3 credits, Fall
For non-majors and music majors. Presents the diatonic material and structure of tonal music in theory and practice through written exercises, compositions, listening, and analysis. This is the first term of a three-term sequence that includes concepts of pitch and rhythm, intervals, two voice composition, triads, notation, scoring, and Renaissance practices. Provides a thorough groundwork in the melodic, harmonic, and rhythmic elements of music. Includes study of the practices and styles of Bach, Haydn, Mozart, Beethoven, and other 17th and 18th century composers. Recommended: Pass MTH-095 or placement in MTH-111; Pass WRD-098 or placement in WR-121. Required: 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. Corequisite: MUS-111.

MUS-112 Music Theory I
3 credits, Winter
For non-majors and music majors. Presents the diatonic material and structure of tonal music in theory and practice through written exercises, compositions, listening, and analysis. This is the second term of a three-term sequence that includes tonic/dominant voice leading phrase models, embellishing tones, chorale harmonization, figured bass and Renaissance and Baroque Practices. Provides a thorough groundwork in the melodic, harmonic, and rhythmic elements of music. Includes study of the practices and styles of Bach, Haydn, Mozart, Beethoven, and other 17th and 18th century composers. Prerequisites: Pass MUS-111 or instructor consent. 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.

MUS-112L Music Notation Software I
1 credit, Winter
Continues an introduction to Finale (music notation software) on Macintosh computers. Required for first-year music majors. Corequisite: MUS-112.

MUS-113 Music Theory I
3 credits, Spring
For non-majors and music majors. Presents the diatonic material and structure of tonal music in theory and practice through written exercises, compositions, listening, and analysis. This is the third term of a three-term sequence that includes leading tone and six-four chords, interaction of melody and harmony, diatonic sequences, secondary dominants and leading tone chords, phrase rhythm and motivic analysis, and Renaissance and Baroque Practices. Provides a thorough groundwork in the melodic, harmonic, and rhythmic elements of music. Includes study of the practices and styles of Bach, Haydn, Mozart, Beethoven, and other 17th and 18th century composers. Pass MUS-112 or instructor consent. Required: First year music majors must take MUS-113 concurrently with MUS-113 concurrently with MUS-113L, MUS-116, and MUS-129. This requirement does not affect non-music majors.

MUS-113L Music Notation Software I
1 credit, Spring
Continues an introduction to Finale (music notation software) on Macintosh computers. Required for first-year music majors. Prerequisite: MUS-113 or instructor consent.

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 for first-year music majors.

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 for first-year music majors. Prerequisite: Pass MUS-114 or instructor consent.

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 for first-year music majors. Prerequisite: Pass MUS-115 or instructor consent.

MUS-117 Sight-Reading
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. Studies keyboard applications of the materials of tonal music. Corequisites: MUS-111.

MUS-128 Keyboard Skills I
2 credits, Winter
Develops basic keyboard skills. Studies keyboard applications of the materials of tonal music. Corequisites: MUS-112 Prerequisite: Pass MUS-127 or instructor consent.

MUS-129 Keyboard Skills I
2 credits, Spring
Develops basic keyboard skills. Studies keyboard applications of the materials of tonal music. Corequisites: MUS-113. Prerequisite: Pass MUS-128 or instructor consent.

MUS-130 Music & Media: Sex, Drugs, Rock & Roll
1 credit, Fall/Winter/Spring
Explores the relationship of music to economic, political, cultural and artistic subjects. Examines how music serves and is served by pop culture and media.

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, technique, exercises, and the opportunity to share your music with others. All levels welcome, beginners through advanced.

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, technique, exercises, and the opportunity to share your music with others. All levels welcome, beginners through advanced.

MUS-133 Group Piano: Piano for Pleasure
1 credit, Spring
Beginning classroom piano instruction for non-music majors. Includes reading, theory, technique, exercises, and the opportunity to share your music with others. All levels welcome, beginners through advanced.

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/Spring
For intermediate to advanced players. Covers finger picking, lead guitar, rock and popular styles, music reading, and music theory. Students provide their own instrument.

MUS-140 Careers in Music
3 credits, Fall
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 for the Music Technology certificate.

MUS-141 Introduction to the Music Business
3 credits, Winter
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. Prerequisite: Pass MUS-142 or instructor consent.

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: Pass MUS-143 or instructor consent.

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, Winter/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. Prerequisite: MUS-107 or MUS-143 or equivalent; or instructor consent.

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 in small groups. Required: Must have a 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 and writing of basic film/video/game music score and spotting music cues. Prerequisites: MUS-129 or MUS-102, or instructor consent.

MUS-189 Performance & Repertoire
1 credit, Fall/Winter/Spring
A performance forum required for all students studying privately non-jazz sections at the MUP-171-191 and MUP-271-291 levels. Each student must perform as a soloist on his/her major instrument at least once a term and must be present for performances of classmates. Performers will be critiqued by the instructor. Students will be required to attend approved concerts. 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: Pass 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: Pass WRD-098 or placement in WR-121.

MUS-211 Music Theory II
3 credits, Fall
For non-majors and music majors. Continuation of the study of harmony and of the material and structure of tonal music in theory and practice through written exercises, compositions, listening, and analysis. This is the first term of a three-term sequence that includes the study of species counterpoint, melodic and rhythmic embellishment, notation and scoring, phrase model review, chord voicing in multiple parts, embellishing tones, and chorale harmonization. Also includes study of harmonic counterpoint and composition in small forms in various 18th, 19th, and 20th century idioms. Prerequisite: MUS-113 or instructor consent. Corequisite: MUS-211L, MUS-214, and MUS-224.

MUS-211L Music Notation Software II
1 credit, Fall
Advanced use of Finale (music notation software). Required for second-year music majors. Prerequisite: Pass MUS-113L or instructor consent. Corequisite: MUS-211.

MUS-212 Music Theory II
3 credits, Winter
For non-majors and music majors. Continuation of the study of harmony and of the material and structure of tonal music in theory and practice through written exercises, compositions, listening, and analysis. This is the second term of a three-term sequence that includes the study of cadences, diatonic sequence, secondary dominants, tonicizing, modulation, and binary and ternary forms. Also includes study of harmonic counterpoint and composition in small forms in various 18th, 19th, and 20th century idioms. Prerequisites: Pass MUS-211 or instructor consent. Required: Ability to read music. This course is required for music majors.

MUS-212L Music Notation Software II
1 credit, Winter
Advanced use of Finale (music notation software). Required for second-year music majors. Prerequisite: Pass MUS-211L.

MUS-213 Music Theory II
3 credits, Spring
For non-majors and music majors. Continuation of the study of harmony and of the material and structure of tonal music in theory and practice through written exercises, compositions, listening, and analysis. This is the third term of a three-term sequence that includes the study of modal mixture-color and drama in composition, neapolitan and augmented sixths, popular song and art song, rondo and variation, sonata form and chromaticism. Also includes study of harmonic counterpoint and composition in small forms in various 18th, 19th, and 20th century idioms. Prerequisites: Pass MUS-212 or instructor consent. Corequisite: MUS-113L, MUS-216, and MUS-226.

MUS-213L Music Notation Software II
1 credit, Spring
Advanced use of Finale (music notation software) and basic use of InDesign (desktop publishing software) on Macintosh computers. Required for second-year music majors. Prerequisite: Pass MUS-212L or instructor consent.

MUS-214 Keyboard Skills II
2 credits, Fall
Advanced keyboard applications of the materials of diatonic and chromatic music. Required for second-year music majors. Prerequisite: Pass MUS-129 or instructor consent.

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 for second-year music majors. Prerequisite: Pass MUS-214 or instructor consent.

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 for second-year music majors. Prerequisite: Pass MUS-215 or instructor consent.

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 for second-year music majors. Prerequisite: Pass MUS-116 or instructor consent. Corequisite: 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 for second-year music majors. Prerequisite: Pass MUS-224 or instructor consent. Corequisite: 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 for second-year music majors. Prerequisite: Pass MUS-225 or instructor consent. Corequisite: MUS-213.

MUS-230 Music & 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-247 Music, Sound & Moviemaking
3 credits, Fall/Spring
Introduction to sound as related to moviemaking. Students will have the opportunity to create and assemble music sound for video into a finished product. Explores the basic components of commercial film/video production as they relate to sound.

MUS-280 Music/CWE
2-6 credits,
Fall/Winter/Spring/Summer
Cooperative work experience. Provides students with on-the-job work experience in the field of music. Prerequisites: Pass MUS-107, MUS-140 and MUS-142. Corequisite: CWE-281. Required: Instructor consent.

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 lifestyle patterns and risk factors for disease/illness, apply growth and development theory, interview patients in a culturally sensitive manner, work as members of a multidisciplinary team giving and receiving feedback about performance, and use reflective thinking about their practice as nursing students. Populations studied in the course include children, adults, older adults and the family experiencing a normal pregnancy. Includes classroom and clinical learning experiences. The clinical portion of the course includes practice with therapeutic communication skills and selected core nursing skills identified in the OCNE Core Nursing Skills document. Corequisite: NRS-110C. Required: Admission into the CCC Nursing Program.

NRS-110C Foundations of Nursing - Health Promotion Clinical
4 credits, Fall
This course introduces the learner to framework of the OCNE curriculum. The emphasis on health promotion across the life span includes learning about self-health as well as client health practices. To support self and client health practices, students learn to access research evidence about healthy lifestyle patterns and risk factors for disease/illness, apply growth and development theory, interview clients in a culturally sensitive manner, work as members of a multidisciplinary team giving and receiving feedback about performance, and use reflective thinking about their practice as nursing students. Populations studied in the course include children, adults, older adults and the family experiencing a normal pregnancy. Includes classroom and clinical learning experiences. Corequisite: NRS-110.

NRS-111 Foundations of Nursing - 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. Prerequisite: NRS-110. Corequisites: NRS-230, NRS-232, NRS-111C.

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. This course includes classroom and clinical learning experiences with simulation experience as part of total clinical hours. Prerequisites: NRS-110. Corequisites: NRS-230, NRS-232, NRS-111.

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. Prerequisite: NRS-111, NRS-111C. Corequisites: NRS-112C, NRS-231, 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. Prerequisites: NRS-111, NRS-111C. Corequisites: NRS-112, NRS-231, NRS-233.

NRS-221 Chronic Illness II & 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. Prerequisites: NRS-222, NRS-222C, NRS-232, NRS-233. Corequisite: NRS-221C.

NRS-221C Chronic Illness II & 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. Prerequisites: NRS-222, NRS-231, NRS-233. Corequisite: 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. Prerequisites: NRS-112, NRS-231, NRS-233. Corequisite: 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. Prerequisites: NRS-112, NRS-231, NRS-233. Corequisite: 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. Prerequisite: NRS-221. Corequisite: 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. Prerequisite: NRS-221. Corequisite; NRS-224.

NRS-230 Clinical Pharmacology I
3 credits, Winter

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. Prerequisites: BI-231, BI-232, BI-233, BI-234, NRS-110, NRS-110C. Corequisites: NRS-111, NRS-111C, NRS-232.

NRS-231 Clinical Pharmacology II
3 credits, Spring

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. Prerequisites: NRS-111, NRS-111C, NRS-230, BI-231, BI-232, BI-233, and BI-234. Corequisites: NRS-112, NRS-112C, 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. Prerequisites: NRS-110, NRS-110C, BI-231, BI-232, BI-233, BI-234. Corequisites: NRS-111, NRS-111C.

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. Prerequisite: NRS-232. Corequisites: NRS-112, NRS-112C, NRS-231.

NUR

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Nursing Assistant

NUR-100 Nursing Assistant I
7 credits, Fall/Winter/Spring/Summer
Prepares the student to perform routine nursing assistant tasks to clients in subacute care settings as well as in the community. Includes of 80 hours of didactic and skills lab instruction. May not be challenged. Corequisite: NUR-100C.

NUR-100C Nursing Assistant I Clinical
0 credit, 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. Corequisite: NUR-100.

NUR-101 Certified Nursing Assistant 2-Acute Care
3 credits, not offered every year
This course prepares the student to perform routine nursing assistant tasks that are needed in the acute care setting. The Oregon State Board of Nursing requires a minimum of 64 hours of didactic and skills lab instruction. May not be challenged. Corequisite: NUR-101C.

NUR-101C Certified Nursing Assistant 2-Acute Care Clinical
0 credit, not offered every year
This course prepares the student to perform routine nursing assistant tasks that are needed in the acute care setting. The Oregon State Board of Nursing requires a minimum of 64 hours of didactic and skills lab instruction. May not be challenged. Corequisite: NUR-101.

NUR-160 Fluid and Electrolytes
2 credits, Winter
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. Prerequisite: Pass BI-233.

NUR-217 Basic EKG Interpretation I
1 credit, Spring
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, Spring
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

Courses with this prefix may not transfer to a four-year institution.

Occupational Skills Training/CWE

OST-180 Occupational Skills Training/CWE
1-12 credits
Fall/Winter/Spring/Summer
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.

PE

Physical Education

PE-185 Physical Education
1 credit, Fall/Winter/Spring/Summer
Various activity classes which may include aikido, aerobic dance, ballet, basketball, conditioning, cross training, golf, karate, racquetball, rock climbing, self-defense, soccer, softball, swimming, swing dance, tai chi, tennis, volleyball, weight training, yoga, and Zumba. Current physical examination before enrolling in a physical education course is recommended.

PE-240 Strength & Conditioning Theory and Techniques
3 credits, not offered every spring
Designed to provide students the knowledge to design and implement physical training programs and exercises for participants. The curriculum will also help students pass various personal training certification tests. Introductory exercise physiology, biomechanics, program design, and exercise techniques are covered.

PE-260 Care & 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 & 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 student's job performance by qualified college staff and site supervision. Corequisite: CWE-281. Required: Instructor consent.

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 General 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. Recommended: Pass WRD-098 or placement in WR-121; pass MTH-095 with a C or better or placement in MTH-105 or MTH-111.

PH-122 General Astronomy
4 credits, Fall/Winter/Spring
A lab course including the properties of our sun, other stars, and stellar evolution. Prerequisite: Pass PH-121 or GS-107; or instructor consent.

PH-123 General Astronomy
4 credits, Spring
A lab course including star clusters, the properties of our own galaxy, the other galaxies and cosmology. Prerequisite: Pass PH-122 or instructor consent.

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. Prerequisite: Pass MTH-112 with a C or better or placement in MTH-251 and pass WRD-090 with a C or better or placement in RD-1151, or placement in WR-121; or instructor consent.

PH-202 General Physics
5 credits, Winter
A lab course covering electricity, magnetism, DC and AC circuits, and electromagnetic radiation. Prerequisite: Pass PH-201 or instructor consent.

PH-203 General Physics
5 credits, Spring
A lab course covering thermodynamics, fluids, waves, geometrical optics, wave optics, and modern physics. Prerequisite: Pass PH-202 or instructor consent.

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. Prerequisites: Pass MTH-251 with a C or better or placement in MTH-252 and pass WRD-090 with a C or better or placement in RD-115, or placement In WR-121; or instructor consent. Recommended: Pass MTH-254.

PH-212 General Physics With Calculus
5 credits, Winter
A lab course covering electricity, magnetism, DC and AC circuits, and electromagnetic radiation. Prerequisites: Pass PH-211 and MTH-252 or instructor consent. Recommended: Pass 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: Pass PH-212; or instructor consent.

PHL
Philosophy

PHL-101 Philosophical Problems
4 credits, Fall/Winter/Spring/Summer
Presents a variety of topics that may include: the nature of reality, knowledge and doubt; the human condition; truth; and the search for meaning. Recommended: Pass WRD-090 or placement in RD-115.

PHL-102 Ethics
4 credits, Fall/Winter/Spring
Introduces the study of morality: e.g., right and wrong, free will and determinism, morals and society. Recommended: Pass WRD-090 or placement in RD-115.

PHL-103 Critical Reasoning
4 credits, Fall/Winter/Spring
Focuses on improving reasoning and critical assessment ability. Emphasizes practical methods, involves study of editorials, essays, propaganda and advertisements. Recommended: Pass WRD-090 or placement in RD-115.

PHL-205 Moral Issues
4 credits, not offered every term
Philosophical examination of selected moral issues such as the environment, biomedical ethics, human experimentation, professional ethics, privacy and war. Recommended: Pass WRD-090 or placement in RD-115.

PHL-210 Philosophy of Religion
4 credits, not offered every term
Introduces philosophic basis of religious thought in world culture. Explores different points of view. Recommended: Pass WRD-090 or placement in RD-115.

PHL-215 History of Western Philosophy
4 credits, not offered every term
Overview course examines the roots and development of Western thought including ancient, medieval, modern and contemporary philosophy. Covers concepts of existence, knowledge, truth and morality. Recommended: Pass WRD-090 or placement in RD-115.

PIE

Courses with this prefix will not transfer to a four-year institution. Courses are intended for PIE students.

Program for Intensive English

PIE-010 Beginning Grammar
0 credit, Fall/Winter/Spring/Summer
English language learners study and practice the simple present tense of the verb "to be," nouns, descriptive and possessive adjectives, prepositions of place and time, and simple sentence structures in written and spoken English. Required: Instructor consent.

PIE-012 Beginning ESL
0 credit, 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: Instructor consent.

PIE-014 Beginning Reading and Writing
0 credit, not offered every term
English language learners read and write the alphabet, sight words, and simple sentences. Required: Instructor consent.

PIE-020 Upper Beginning Grammar
0 credit, 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: Instructor consent.

PIE-024 Upper Beginning Reading and Writing
0 credit, 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: Instructor consent.

PIE-030 Intermediate Grammar A
0 credit, Fall/Spring
One of a two-part series. English language learners extend their understanding of basic verb forms (simple present, simple past, and present progressive), study and practice past progressive, used to, future time formations, and wh-questions in written and spoken English. Required: Instructor consent.

PIE-031 Intermediate Grammar B
0 credit, Winter/Summer
One of a two-part series. English language learners study and practice present perfect verb forms with time expressions and adverbs of frequency, modals of ability, permission, and advice, and comparative and superlative adjectives in written and spoken English. Required: Instructor consent.

PIE-032 Intermediate Conversation
0 credit, 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: Instructor consent.

PIE-034 Intermediate Reading/Writing
0 credit, 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: Instructor consent.

PIE-040 Upper Intermediate Grammar A
0 credit, Fall/Spring
One of a two-part series. English language learners study and practice verb forms that frequently occur together, gerunds, infinitives, and causative verbs in written and spoken English. Required: Instructor consent.

PIE-041 Upper Intermediate Grammar B
0 credit, Winter/Summer
One of a two-part series. English language learners study and practice adjective clauses, phrasal verbs, and passive voice in written and spoken English. Required: Instructor consent.

PIE-042 Upper Intermediate Conversation
0 credit, 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: Instructor consent.

PIE-044 Upper Intermediate Reading/Writing
0 credit, 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: Instructor consent.

PIE-046 Editing for Better Writing
0 credit, Fall/Winter/Spring
English language learners improve their writing through editing. They will also engage in extended reading to provide a context for writing. Required: Instructor consent.

PIE-047 Editing Part I
0 credit, not offered every term
English language learners improve their writing through editing. Required: Instructor consent.

PIE-060 Vocabulary Building I
0 credit, 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: Instructor consent.

PIE-061 Vocabulary Building II
0 credit, 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: Instructor consent.

PIE-062 ESL Reading I
0 credit, 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: Instructor consent.

PIE-063 ESL Reading II
0 credit, 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: Instructor consent.

PIE-066 Bridge to College and Career
3 credits, not offered every term
English Language Learners apply their developing English language skills to read, write, speak and listen in real world contexts provided by college and career-related materials, intensifying their language acquisition process while preparing to move beyond the ESL program. Required: Instructor consent.

PIE-067 Spelling
0 credit, 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: Instructor consent.

PIE-068 Bridge to Computers
0 credit, 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: Instructor consent.

PIE-087 Computer Lab
0 credit, Fall/Winter/Spring/Summer
English language learners improve their language skills by using language learning software. Required: Instructor consent.

PIE-090 International Student Success
0 credit, Fall/Winter/Spring/Summer
International students entering Clackamas Community College for the first time learn about college policies and procedures, students' rights and responsibilities, matriculation procedures, linguistic and cultural adjustment, and laws affecting students. Required: Instructor consent.

PIE-091A PIE Skills Lab First-Year Fall
0 credit, Fall
This first year course is intended to intensify students' learning at each level. Fall term, students build on the language learning skills and strategies acquired during the previous and current terms. Required: Instructor consent.

PIE-091B PIE Skills Lab First-Year Winter
0 credit, Winter
This first year course is intended to intensify students' learning at each level. Winter term, students build on the language learning skills acquired during the previous and current terms. Required: Instructor consent.

PIE-091C PIE Skills Lab First-Year Spring
0 credit, Spring
This first year course is intended to intensify students' learning at each level. Spring term, students build on the language learning skills and strategies acquired during the previous and current terms. Required: Instructor consent.

PIE-091D PIE Skills Lab First-Year Summer
0 credit, Summer
This first year course is intended to intensify students' learning at each level. Summer term, students build on the language learning skills and strategies acquired during the previous and current terms. Required: Instructor consent.

PIE-091E PIE Skills Lab Second-Year Fall
0 credit, Fall
This second year course is intended to intensify students' learning at each level. Fall term, students build on the language learning skills and strategies acquired during the previous and current terms. Required: Instructor consent.

PIE-091F PIE Skills Lab Second-Year Winter
0 credit, Winter
This second year course is intended to intensify students' learning at each level. Winter term, students build on the language learning skills and strategies acquired during the previous and current terms. Required: Instructor consent.

PIE-091G PIE Skills Lab Second-Year Spring
0 credit, Spring
This second year course is intended to intensify students' learning at each level. Spring term, students build on the language learning skills and strategies acquired during the previous and current terms. Required: Instructor consent.

PIE-091H PIE Skills Lab Second-Year Summer
0 credit, Summer
This second year course is intended to intensify students' learning at each level. Summer term, students build on the language learning skills and strategies acquired during the previous and current terms. Required: Instructor consent.

PIE-092 International English Language Testing System (IELTS) Preparation Reading & Speaking
0 credit, not offered every year
This course prepares students for the International English Language Testing System (IELTS) by improving reading and speaking skills. It includes familiarization with the test components, test-taking techniques, and strategies. Required: Instructor consent.

PIE-093 International English Language Testing System (IELTS) Preparation Listening & Writing
0 credit, Spring
International students prepare for the International English Language Testing System (IELTS) by improving listening and writing skills. It includes familiarization with the test components, test-taking techniques, and strategies. Required: Instructor consent.

PIE-094 TOEFL/TOEIC Preparation
0 credit, 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: Instructor consent.

PIE-095 PIE Tutoring
0 credit, 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: Instructor consent.

PS
Political Science

PS-200 Introduction to Political Science
4 credits, Fall/Winter/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: Pass WRD-090 or placement in RD-115.

PS-201 American Government & Politics
4 credits, not offered every term
Examines the founding principles of the American government: the Constitution, the separation of powers, and the three branches of government. Explores political parties and elections, the growing power of the executive branch, the expansion and reach of the federal bureaucracy, governmental policies, the civil liberties and civil rights of American citizens, and the role of the media in American politics. Recommended: Pass WRD-090 or placement in RD-115.

PS-203 U.S. Government: State & Local Institutions
4 credits, not offered every term
Introduces students to American state and local government, with an emphasis on Oregon politics at the state and local level. Recommended: Pass WRD-090 or placement in RD-115.

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. Includes a wide-ranging assessment of the fundamental differences between presidential and parliamentary systems, and an exploration of various political systems and governments around the world within the context of current world politics. Recommended: Pass WRD-090 or placement in RD-115.

PS-205 International Relations
4 credits, not offered every term
Introduces the study of international relations by examining the institutions that constitute the international system. Special attention will be paid to the conflicts in the Iraq, Afghanistan, and other theatres of combat, as well as diplomacy and terrorism as instruments of foreign policy. Recommended: Pass WRD-090 or placement in RD-115.

PS-206 Introduction to Political Theory
4 credits, not offered every term
Introduces the fundamental political question: What is justice? Examines the writings of political philosophers such as Plato, Aristotle, Rousseau, and Locke. Recommended: Pass WRD-090 or placement in RD-115.

PS-225 Introduction to Political Ideologies
4 credits, not offered every term
Focuses primarily on the various political ideologies that make up the ideological universe and critically examines such distinct ideologies as liberalism, conservatism, socialism, libertarianism, and fascism. Recommended: Pass WRD-090 or placement in RD-115.

PS-280 Political Science/CWE
2-6 credits, not offered every term
Cooperative work experience. Provides students with on-the-job work experience in the field of political science. Corequisite: CWE-281. Required: Instructor consent.

PS-297 Introduction to Environmental Politics
4 credits, not offered every term
Explores 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: Pass 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: Pass WRD-090 or placement in RD-115.

PSY-110 Psychology: An Overview
4 credits, Fall/Winter/Spring
A general introduction to the field of psychology. Explores a wide variety of topics. Recommended: Pass WRD-090 or placement in RD-115.

PSY-200 Psychology as a Natural Science
4 credits, Fall/Winter/Spring/Summer
Introduction to physiological psychology, the study of how the nervous system produces behavior and cognition. Further topics may include consciousness, sleep, memory, emotion and language. Prerequisite: Previous completion of or current enrollment in WRD-098 or placement into RD-115; or instructor consent. Recommended: Pass WRD-090 or placement in RD-115.

PSY-205 Psychology as a Social Science
4 credits, Fall/Winter/Spring/Summer
Principles of conditioning and social psychology, the study of how groups affect the individual. Further topics may include motivation, personality, development, and stress. Prerequisite: Previous completion of or current enrollment in WRD-098 or placement into RD-115. Recommended: Pass WRD-090 or placement in RD-115.

PSY-214 Introduction to Personality
4 credits, not offered every year
Explores the major theories about personality and personality as conceptualized throughout time, from ancient Greece to contemporary research, with the greatest emphasis on theories originating in the 20th century. Prerequisite: Previous completion of or current enrollment in WRD-098 or placement into RD-115. Recommended: Pass WRD-090 or placement in RD-115.

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: Previous completion of or current enrollment in WRD-098 or placement into RD-115. Recommended: Pass WRD-090 or placement in RD-115.

PSY-219 Introduction to Abnormal Psychology
4 credits, Fall/Winter/Spring
Introduction to abnormal psychology, including disorders and approaches to treatment. Prerequisite: Previous completion of or current enrollment in WRD-098 or placement into RD-115. Recommended: Pass WRD-090 or placement in RD-115.

PSY-221 Introduction to Counseling
4 credits, not offered every term
Provides an overview of the theoretical background for different approaches to counseling. Practical skills development emphasized. Role playing, instructor demonstrations, and experiential exercises will be explored. Recommended: Pass WRD-090 or placement in RD-115.

PSY-231 Introduction to Human Sexuality
4 credits, Fall/Winter/Spring
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, and the biology of sexuality, and conception. Prerequisite: Previous completion of or current enrollment in WRD-098 or placement into RD-115.

PSY-240 Interpersonal Awareness & Growth
4 credits, Fall/Winter/Spring
Examines the dynamics of personality and explores techniques for overcoming self-defeating behaviors. Develops methods for making personal growth changes. Recommended: Pass WRD-090 or placement in RD-115.

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. Corequisite: CWE-281. Required: Instructor consent.

R
Religious Studies

R-101 Comparative Religions
4 credits, not offered every term
The nature of myth and story, ancient religions, ideas of God, Judaism, and introduction to religious topics. Recommended: Pass WRD-090 or placement in RD-115.

R-102 Comparative Religions
4 credits, not offered every term
Covers written and oral sources, Christianity, Islam, and includes the history and philosophy of other Western religious developments. Recommended: Pass WRD-090 or placement in RD-115.

R-103 Comparative Religions
4 credits, not offered every term
The history, ideas, and philosophy of the Eastern religions including Buddhism, Hinduism, and Taoism. Recommended: Pass WRD-090 or placement in RD-115.

R-204 History of Christianity
4 credits, not offered every term
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: Pass WRD-090 or placement in RD-115.

R-210 World Religions
4 credits, Fall/Winter/Spring
An overview course that examines Eastern/Western religions and philosophies through film, text, and/or online presentations. Introduces Hinduism, Buddhism, Chinese religions, Christianity, Judaism, and Islam. Recommended: Pass WRD-090 or placement in RD-115.

R-211 History of the Old Testament
4 credits, not offered every term
Covers the early influences on the Hebrew community, Patriarchs, Abraham, Moses and Sinai. Examines monarchy, prophets, and wisdom literature. Examines modern theories of biblical exegesis. Recommended: Pass WRD-090 or placement in RD-115.

R-212 History of the New Testament
4 credits, not offered every year
Covers the first century influences on the New Testament texts, the life of Jesus, and the Pauline letters. Other early writings will be discussed. Recommended: Pass WRD-090 or placement in RD-115.

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. Corequisite: CWE-281. Required: Instructor consent.

RD
Reading

See also Study Skills (EL).

RD-115 College Reading
3 credits, Fall/Winter/Spring
This transfer elective course presents reading strategies for success in college-level classes. It emphasizes comprehension, critical reading and thinking, and application of reading strategies appropriate to a variety of materials. Vocabulary development is also addressed. Prerequisite: Pass WRD-090 or placement in RD-115.

RET

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Renewable Energy Technology

For additional information contact the Manufacturing Department at 503-594-3318.

RET-150 Home-Built Wind Turbine
2 credits, not offered every term

This course covers construction of home built wind power generators using welding and cutting processes, drill press, and wood cutting hand tools. Students will participate in the construction of windmill power generators. Instruction will include discussions of windmill types, efficiencies, adequate versus sophisticated designs, and directions for the lab projects. The course will use a process published in "Homebrew Wind Power" by Dan Bartmann & Dan Fink (recommended reading).

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. Recommended: RET-209.

RET-213 Renewable Energy III: Installation and 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. Recommended: 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. Recommended: 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. Recommended: 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. Co-requisite: CWE-281. Required: Instructor consent.

SBM

Courses with this prefix will not transfer to a four-year institution.

Small Business Management

For additional information contact the Small Business Development Center at 503-594-0731.

SBM-010 Real Estate Broker License
0 credit, Spring

Prepares students to qualify for the Oregon Real Estate Broker's License exam by studying statutes, rules and anti-discrimination laws pertaining to the licensing and professional real estate activity required by all licensees of the State of Oregon.

SBM-011 Property Management Pre-License
0 credit, 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-020 Small Business Greenhouse
0 credit, 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 credit, Fall/Winter/Spring/Summer

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-022 Small Business Management II
0 credit, Fall/Winter/Spring/Summer

Part 2 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 marketing concepts and strategy.

SBM-023 Small Business Management: Advanced
0 credit, Fall/Winter/Spring/Summer

Part 3 of a multi-year program to help owners and managers of established businesses achieve greater joy and wealth and lead their enterprises more effectively. Course consists of class meetings, individual business counseling, peer networking, and work in/on the business. Class topics emphasize the creation and implementation of action plans that align with the mission, vision, strategy and tactical goals of both the organization and the leader. Prerequisites: SBM-021 or instructor consent.

SM

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

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 Manufacturing Department at 503-594-3318.

SM-136 Photolithography
2 credits, Winter

Provides knowledge on the relationship between theoretical and practical aspects of current methods and equipment used in photolithography, as well as troubleshooting common process and equipment-related problems. Recommended: Completion of SM-150.

SM-150 Semiconductor Processing I
2 credits, Fall

Provides general background knowledge on the processes required to manufacture integrated circuit devices, beginning with silicon material preparation and ending with final assembly and test of a completed device. Micro-contamination is also covered.

SM-160 Semiconductor Processing II
2 credits, Winter

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: Completion of SM-150.

SM-170 Semiconductor Processing III
2 credits, Spring

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: Completion of 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: Completion of SM-150.

SM-280 Electronics & Microelectronics/CWE
2-6 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. Co-requisite: CWE-281. Required: Instructor consent.

SOC

Sociology

SOC-204 Introduction to Sociology
4 credits, Fall/Winter/Spring/Summer

Explores the social perspectives on the principles and processes of human social behavior. Examines concepts such as culture, socialization, social structure, roles, groups, organizations, and social stratification and introduces various sociological theories and research methodologies. Recommended: Pass WRD-098 or placement in WR-121.

SOC-205 Social Stratification and Social Systems
4 credits, Fall/Winter/Spring/Summer
Examines issues of social structure and social stratification. Explores the various social institutions (family, economy, education, health, religion and politics) and inequalities of race, class, gender, age, sexual orientation, and disability, as well as various theoretical perspectives. Recommended: Pass WRD-098 or placement in WR-121.

SOC-206 Institutions and Social Change
4 credits, Fall/Winter/Spring/Summer
Explores various social institutions (family, economy, education, health, religion and politics), stratification systems, social movements and other various elements of culture from a social change perspective. Various theories of social organization and sources of social change will be examined. Recommended: Pass 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: Pass WRD-098 or placement in WR-121.

SOC-225 Social Problems
4 credits, Fall/Winter/Spring
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: Pass WRD-095 or placement in WR-121.

SOC-280 Sociology/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. Provides students with on-the-job work experience in the field of sociology. Corequisite: CWE-281. Required: Instructor consent.

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. SPN-101/102/103 must be taken in sequence. Recommended: Pass 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. SPN-101/102/103 must be taken in sequence. Prerequisite: Pass SPN-101 or instructor consent. Recommended: Pass 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. SPN-101/102/103 must be taken in sequence. Prerequisite: Pass SPN-102 or instructor consent. Recommended: Pass WRD-098 or placement in WR-121.

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. Prerequisite: Pass SPN-103 or instructor consent.

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. Prerequisite: Pass SPN-201 or instructor consent.

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. Prerequisite: Pass SPN-202 or instructor consent.

SPN-211 Intermediate Spanish Conversation
3 credits, not offered every year
Promotes intermediate-level Spanish conversation among students through shared reading of and commentary on Spanish-language novels of equivalent difficulty. Situational role plays are used to practice conversational strategies for use in real-life situations similar to those in the novels. Emphasis in SPN-211 is on crime and fantasy novels. Prerequisite: Pass SPN-203 or instructor consent.

SPN-212 Intermediate Spanish Conversation
3 credits, not offered every year
Promotes intermediate-level Spanish conversation among students through shared reading of and commentary on Spanish-language novels of equivalent difficulty. Situational role plays are used to practice conversational strategies for use in real-life situations similar to those in the novels. Emphasis in SPN-212 is on mystery and romance novels. Prerequisite: Pass SPN-203 or instructor consent.

SPN-213 Intermediate Spanish Conversation
3 credits, not offered every year
Promotes intermediate-level Spanish conversation among students through shared reading of and commentary on Spanish-language novels of equivalent difficulty. Situational role plays are used to practice conversational strategies for use in real-life situations similar to those in the novels. Emphasis in SPN-213 is on historical and adventure novels. Prerequisite: Pass SPN-203 or instructor consent.

SSC

Social Science

SSC-160 Faith & Reason
5 credits, Fall/Winter/Spring
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: Pass WRD-090 or placement in RD-115.

SSC-231 Engendered Identities
4 credits, not offered every term
Examines the various perspectives on the development of gender identities and looks specifically at the ways in which concepts of femininity and masculinity have shaped cultural images, identities and experiences cross-culturally, globally and historically. Recommended: Pass WRD-098 or placement in WR-121.

SSC-233 Electronic Culture
4 credits, Spring
An introduction to the interdisciplinary field of electronic culture, focusing on the use of electronic computer technology by individuals and groups. Examines transformation of self, identity, communication, and development of electronic communities and subcultures. Recommended: Pass WRD-098 or placement in WR-121.

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. Prerequisite: Previous completion of or current enrollment in WRD-098 or placement in RD-115; or instructor consent

SSC-240 American Military Conflict: Wars of National Identity
4 credits, Fall
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: Pass WRD-098 or placement in WR-121.

SSC-241 The American Military Conflict: Global War
4 credits, Winter
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: Pass WRD-098 or placement in WR-121.

SSC-242 The American Military Conflict: Asymmetric Warfare
4 credits, Spring
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: Pass WRD-098 or placement in WR-121.

TA

Theatre Arts

TA-101 Appreciation of Theatre Arts
4 credits, not offered every year
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: Pass WRD-098 or placement in WR-121.

TA-102 Appreciation of Theatre Arts
4 credits, not offered every year
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: Pass WRD-098 or placement in WR-121, pass TA-101.

TA-103 Appreciation of Theatre Arts
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: Pass WRD-098 or placement in WR-121 pass TA-101 and TA-102.

TA-111 Fundamentals of Technical Theatre
4 credits, Fall
Basic 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/or observations of Technical Theatre applications.

TA-112 Fundamentals of Technical Theatre
4 credits, Winter
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
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-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: Pass 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: Pass 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: Pass WRD-098 or placement in WR-121, pass 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. Required: Instructor consent and successful audition. Can be repeated for up to 6 credits. Requires: Successful audition and instructor consent.

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. Required: Instructor consent and successful audition. Can be repeated for up to 6 credits.

TA-211 Technical Theatre Study
4 credits, 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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisites: Pass TA-111, TA-112 and TA-113; or instructor consent.

TA-212 Technical Theatre Study
4 credits, Winter
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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisites: Pass TA-111, TA-112 and TA-113; or instructor consent.

TA-213 Technical Theatre Study
4 credits, Spring
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. Recommended: Pass WRD-098 or placement in WR-121. Prerequisites: Pass TA-111, TA-112 and TA-113; or instructor consent.

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. Required: Instructor consent and successful audition. Can be repeated for up to 6 credits. Required: Instructor consent and successful audition.

TA-280 Theatre/CWE
2-6 credits, Fall/Winter/Spring
Provides student with a learning experience related to course of study and career goal. Major emphasis will be given to on-the-job experience and training. Corequisite: CWE-281. Required: Instructor consent.

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. Can be repeated for up to 6 credits.

TTL
Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business

Transportation & Logistics

TTL-101 Introduction to Professional Truck Driving & Logistics
4 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 CAL, speed management, road conditions, and accident scene management.

TTL-121 Practical Applications in Professional Truck Driving & Logistics
6 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.

TTL-141 Transportation & Logistics 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.

TTL-180 Transportation & Logistics/CWE
6 credits, Fall/Winter/Spring/Summer
Work-based learning 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. Corequisite: CWE-281. Required: Instructor consent.

WET

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

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 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.

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.

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. Review for Oregon Operator certification exams. No lab requirement for this course. Lab includes field trips to local water treatment facilities.

WET-109 Backflow Assembly Operation Procedures and Testing
3 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. Corequisite: 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. Corequisite: MTH-082B.

WET-120 Wastewater Operations II
3 credits, Winter

Secondary wastewater treatment alternatives with municipal application. Fixed and suspended film systems with the association clarification process will be presented. Prerequisite: Pass WET-110 or instructor consent. Corequisite: MTH-082C.

WET-121 Waterworks Operations II
3 credits, Winter

Basic hydrology, ground water and surface water sources, well construction and operation, introduction to water chemistry, waterworks hydraulics, and fundamentals of pumps and pumping. Prerequisite: Pass WET-111 or instructor consent. Corequisite: MTH-082D.

WET-122 Water Distribution/Wastewater Collection Systems
3 credits, Winter

Elementary engineering aspects of water distribution and wastewater collection systems. System components, construction materials, pump station design, and related topics. Prerequisite: Pass WET-110 or instructor consent. Corequisite: 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. Corequisite: Pass BI-204 and WET-123L.

WET-125 High Purity Water Production I
3 credits, not offered every year

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. Prerequisite: Pass CH-104 or instructor consent. Corequisite: 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. Prerequisite: Pass WET-120 or instructor consent. Corequisite: WET-130L.

WET-131 Water Treatment
4 credits, Spring
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. Prerequisite: Pass WET-121 or instructor consent. Corequisite: WET-131L.

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
A lab course providing experience in test procedures required for wastewater treatment NPDES discharge permits and the drinking water industry. Prerequisite: Pass WET-123, or instructor consent.

WET-135 High Purity Water Production II
4 credits, not offered every year
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: Pass WET-125 and MTH-082E; or instructor consent.

WET-180 Water & Environmental Projects I
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. Corequisite: CWE-281. Required: Instructor consent.

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. Prerequisite: Pass BI-204 or instructor consent.

WET-242 Hydraulics/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. Prerequisite: Pass WET-122 or instructor consent.

WET-245 Instrumentation and 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 HPW 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. Corequisite: CWE-281. Required: Instructor consent.

WLD

Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Welding Technology

XWLD-s0001 AWS Certification 1 Plate Test
0 credit, Fall/Winter/Spring/Summer
Welder certification in accordance with AWS Dl .1 for one position for students enrolled in any CCC welding course. Required: Instructor consent.

XWLD-0002 AWS Certification 2 Plate or 1 Pipe Test
0 credit, Fall/Winter/Spring/Summer
Welder certification in any two positions, in accordance with AWS D1.1 for students enrolled in any CCC welding course. Required: Instructor consent.

XWLD-0003 AWS Certification Retake Test
0 credit, 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: Instructor consent.

WLD-100 Welders' Print Reading I
3 credits, Fall/Winter/Spring
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 and 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 operation and set-up procedures for CNC plasma as well as geometry creation and programming. 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
Provides theory and practical instruction to become a certified welder. Students will choose which process of welding (flux core arc welding, shielded metal arc welding, or gas tungsten arc welding) they want to become certified in. Material needed for practice welding will be provided. You will take a welding certification at the end of the class. May be repeated for up to 12 credits.

WLD-111 Shielded Metal Arc Welding (Stick)
8 credits, Fall/Spring
Provides students with the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet and groove welds in all positions with the SMAW process. Oxy-fuel cutting, air carbon arc cutting and gouging will be covered. Welding codes, standards, and specifications will be reviewed.

WLD-111A Shielded Metal Arc Welding (Stick)
4 credits, Fall/Spring
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, Fall/Spring
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. Prerequisite: Pass WLD-111A or instructor consent.

WLD-113 Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)
8 credits, Summer/Fall/Winter
Provides students with the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet and groove welds in all positions with the Gas Metal Arc and Flux Core Arc Welding processes. Oxy-fuel cutting, and air carbon arc cutting and gouging will be covered. Welding codes, standards and specifications will be reviewed.

WLD-113A Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)
4 credits, Summer/Fall/Winter
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, Summer/Fall/Winter
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. Prerequisite: Pass WLD-113A or instructor consent.

WLD-115 Gas Tungsten Arc Welding (GTAW)
8 credits, Winter/Spring
Provides students with the opportunity to acquire knowledge and skills to set up and operate equipment to perform fillet and groove welds in all positions with the Gas Tungsten Arc Welding process. Plasma arc cutting will be covered. Welding codes, standards, and specifications will be reviewed.

WLD-115A Gas Tungsten Arc Welding (GTAW)
4 credits, Winter/Spring
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 Metal Arc Welding process. Plasma arc cutting will be covered.

WLD-115B Gas Tungsten Arc Welding (GTAW)
4 credits, Winter/Spring
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. Prerequisite: Pass WLD-115A or instructor consent.

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 Welders' Print Reading II
3 credits, Spring
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. Prerequisite: WLD-100 or instructor consent.

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: Pass WLD-111 or WLD-111A & WLD-111B, pass WLD-150, or prior experience in SMAW; or instructor consent.

WLD-211 Advanced Shielded Metal Arc Welding
4 credits, Fall/Spring
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. Prerequisite: Pass WLD-111 or Pass WLD-111A and WLD-111B; or instructor consent.

WLD-212 Shielded Metal Arc Welding Pipe Welding
2 credits, Fall/Winter/Spring
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. Prerequisite: Pass WLD-211 or instructor consent.

WLD-213 Advanced Gas Metal Arc Welding / Flux-Core Arc Welding
4 credits, Summer/Fall/Winter
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. Prerequisite: Pass WLD-113 or Pass WLD-113A and WLD-113B; or instructor consent.

WLD-215 Advanced Gas Tungsten Arc Welding
4 credits, Winter/Spring
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: Pass WLD-115 or Pass WLD-115A and WLD-115B; or instructor consent.

WLD-230 CNC Press Brake
3 credits, not offered every term
This is a hands-on class where students will learn how to safely set-up and operate a Computerized Numerically Controlled (CNC) Press Brake. Subjects include: basic calculations related to metal forming, tooling fundamentals, flat pattern development concepts, and CNC forming techniques. Prerequisites: Pass MTH-050 and WLD-100; or instructor consent.

WLD-250 Welding Fabrication I Beginning Project
4 credits, Fall/Winter/Spring
This course consists of lecture and lab and will 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. Prerequisite: Pass MFG-103 or MFG-111, and WLD-111, WLD-113 or WLD-115; or instructor consent.

WLD-251 Welding Fabrication II Intermediate Project
4 credits, Fall/Winter/Spring
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. Prerequisite: Pass WLD-250 or instructor consent.

WLD-252 Welding Fabrication III Advanced Project
4 credits, Fall/Winter/Spring
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. Prerequisite: Pass WLD-251 or instructor consent.

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. May be repeated for 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. Recommended: At least one year of welding experience. Required: Instructor consent.

WLD-280 Welding Technology/CWE
1-6 credits
Fall/Winter/Spring/Summer
Work-based learning 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. May be repeated up to 9 credits. Prerequisite: CWE-281. Required: Instructor consent.

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. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass WRD-098 or placement in WR-121; or instructor consent.

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. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass WRD-098 or placement in WR-121; or instructor consent.

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. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass WR-121 with a C or better; or instructor consent.

WR-123 English Composition
3 credits, Not offered every year
Writing the longer academic research paper: format and style, advanced research techniques, and organizational skills. Recommended: Pass WRD-090 or placement in RD-115. Prerequisites: Pass WR-122 or instructor consent.

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-140 Introduction to Writing Creatively
4 credits, Fall/Summer
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: Pass WRD-098 or placement in WR-121; or instructor consent.

WR-148 Self-Publishing: Design & Layout
1 credit, not offered every term
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
1 credit, Spring
In this course students will create and manage blogs of various content and purpose, exploring a variety of platforms and writing for diverse audiences.

WR-200 Writing About Literature@@
4 credits, not offered every term!!
This course focuses on exploring various forms of literature with an emphasis on developing critical strategies for responding to readings both on an academic and creative level. Through a consideration of the writer's work and purpose, we will explore ways of joining the conversation about literature, of examining and refining methods of response through reading, discussion, and writing.%%

WR-220 Creative Writing: Comics
4 credits, Spring
Designed for students with previous writing experience who wish to learn the techniques of scriptwriting for comics, graphic novels and/or narrative sequential art. Prerequisites: Pass WRD-098 or placement in WR-121; or instructor consent. Recommended: Pass ENG-116, pass WRD-090 or placement in RD-115.

WR-222 English Composition
4 credits, Winter/Spring
Writing university-level research papers and pursuing lifelong learning through advanced research, culminating in an original research paper and class presentation of findings. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass WR-122 or instructor consent.

WR-227 Technical Report Writing
4 credits, Fall/Winter/Spring/Summer
Introduction to report and proposal writing, stressing organization, form, and style. Emphasis on materials gathered from professional fields such as medicine, dentistry, government, criminal justice, business, engineering, technology, science, and public relations. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass WR-121 with a C or better; or instructor consent.

WR-240 Creative Writing: Nonfiction
4 credits, Spring
Techniques of writing and analyzing types of creative nonfiction such as literary journalism, memoirs, nature or science writing, and personal essays. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass WRD-098 or placement in WR-121 or instructor consent.

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. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass WRD-098 or placement in WR-121 or instructor consent.

WR-242 Creative Writing: Poetry
4 credits, 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. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass WRD-098 or placement in WR-121 or instructor consent.

WR-243 Creative Writing: Playwriting
4 credits, not offered every term
Designed for students with previous writing experience who wish to learn the technique of playwriting, including the art of dialogue and the elements of dramatic structure. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass WRD-098 or placement in WR-121 or instructor consent.

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. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass WR-241 or instructor consent.

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. Prerequisite: Pass WR-242 or instructor consent.

WR-246 Editing & Publishing
4 credits, Winter
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. Recommended: Pass WRD-098 or instructor consent.

WR-248 Self-Publishing Manuscripts
4 credits, Fall
This course covers the design and layout process to produce and self-publish manuscripts in book form. It includes basic design theory and the step-by-step process for laying out a manuscript using Adobe InDesign. Students will also learn how to submit publishable files to Amazon.com for sale and distribution.

WR-262 Introduction to Screenwriting
4 credits, Fall
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. Prerequisite: Pass WRD-098 or placement in WR-121 or instructor consent.

WR-263 Advanced Screenwriting
4 credits, not offered every year
An expansion of fundamental skills initiated in the introductory course. 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. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass WR-262 or instructor consent.

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.

WR-268 Nature Writing
4 credits, Spring
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. Recommended: Pass WRD-090 or placement in RD-115. Prerequisite: Pass 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: Pass WRD-098 or placement in WR-121.

WRD
Writing and Reading

WRD-080 Reading/Writing Prep 2
3 credits, Fall/Winter/Spring
Focuses on fundamental reading skills with an emphasis on non-fiction passages, including identifying main ideas, supporting details and following the development of ideas. Vocabulary improvement emphasizes dictionary skills. Core reading comprehension strategies and inferences are introduced.

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-090A Supplementary Instruction for WRD-090 Students
1 credit, Fall/Winter/Spring/Summer
Provides individualized assistance to students in WRD090. Students meet one-on-one with Writing Center tutors, who tailor tutoring and lab work to the students' individual needs and focus on fundamentals not directly taught in WRD090. A WRD instructor oversees the tutoring and/or lab work to coordinate (and avoid duplication) with in-class instruction. Corequisites: WRD-090. Requirements: Tutoring dates and time arranged with instructor and instructor consent. Recommendations: Concurrent enrollment 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 WRD90 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: Pass WRD-090 or WR-090 or placement in WRD-098.

WRD-098A Supplementary Instruction for WRD-098 Students
1 credit, Fall/Winter/Spring/Summer
This course builds on the basic reading and writing skills covered in WRD90 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. Requirements: Tutoring dates and time arranged with instructor and instructor consent. Recommendations: Concurrent enrollment in WRD-098 or WR-121.

WS

Provides individualized assistance to students in WRD098. Students meet one-on-one with Writing Center tutors, who tailor tutoring and lab work to the students' individual needs and focus on fundamentals not directly taught in WRD098. A WRD instructor oversees the tutoring and/or lab work to coordinate (and avoid duplication) with in-class instruction.

Women's Studies

WS-101 Introduction to Women's Studies

4 credits, not offered every term

Course will examine and analyze the position of women in society and critically explore social issues relevant to women's lives and feminism historically and in the present/future. Topics: family, education, work, healthcare, sexuality, and political/economic status. Recommended: Pass WRD-090 or placement in RD-115.

Z

Zoology

Z-201 General Zoology

4 credits, Fall

A lab course offering cellular and molecular basis of animal life including genetics, evolution, systematics, and protozoan diversity. Recommended: Pass MTH-095 or MTH-098 with a C or better or placement in MTH-105 or MTH-111; pass WRD-090 or placement in RD-115; pass WRD-098 placement in WR-121.

Z-202 General Zoology

4 credits, Winter

A lab course covering the maintenance of the cellular environment, evolution of animal systems and diversity of the less complex invertebrate animal phyla. Recommended: Pass MTH-095 with a C or better or placement in MTH-105 or MTH-111; Pass 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 behavior, distribution, ecology, and conservation. Recommended: Pass MTH-095 with a C or better or placement in MTH-105 or MTH-111; Pass WRD-098 or placement in WR-121.

Z-280 Zoology/CWE

2-6 credits, not offered every term

Cooperative work experience. Provides students with on-the-job work experience in the field of Zoology. Corequisite: CWE-281. Required: Site location and department faculty coordination oversight and instructor consent.

Faculty & Administration

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2016-17 FACULTY & ADMINISTRATION

Akini, Pam (2007)
Business/Customized Training & Development
B.S. Eastern Oregon University
M.S. Eastern Oregon University

Albers, Richard L. (2008)
Computer Science
A.A.S. Parkland Community College
B.S. University of Arkansas
M.S. University of Arkansas

Altman, Matthew (2010)
Associate Dean, Arts & Sciences
B.A. Johns Hopkins University
M.S. Northwestern University
J.D./M.I.P. University of New Hampshire School of Law (formerly Franklin Pierce Law Center)

Andersen, David R. (1997)
Art
M.F.A. Brigham Young University

Anderson, Craig J. (2007)
Manufacturing/Engineering Technology
A.S. Oregon Technical Institute
B.S. Oregon State University
M.S.M. Multnomah Seminary

Anderson, Debra A. (2010)
Nursing
R.N. Good Samaritan School of Nursing

Anderson Wieck, Patricia C. (2014)
Dean, Human Resources
M.B.A. George Fox University
Senior Professional in Human Resources Certificate

Arguello, Adela (2014)
Economics
M.A. Indiana University
Ph.D. Indiana University
Baird, Dion (2014)
Dean, Information Technology Division

Baratto, Stefan (2000)
Mathematics
B.G.S. University of Michigan
M.S. University of Oregon

Bare, Dustin (2011)
Director, Student Academic Support Services
M.A. Concordia University

Bates, Dustin (2014)
Welding
A.A.S. Clackamas Community College

Bjerre, Irma C. (2000)
World Languages
B.A. University of Nevada
M.A. University of Nevada

Blackwell, Ernest "Tory" (2012)
Biology
B.S. University of Illinois at Chicago
Ph.D. University of Illinois at Chicago

Bostrom, Gregory A. (2010)
Physics
B.S. Northwest Missouri State University
M.S. University of Illinois at Chicago
M.S. Portland State University
Ph.D. Portland State University

Bown, Jennifer P. (2003)
Science
B.S. University of Nevada, Reno
M.S. University of Nevada, Reno

Bradley, David A. (1999)
Automotive Technology
A.G.S. Clackamas Community College

Brennan, Kelly J. (1996)
Communication Studies
A.A./A.S. Clackamas Community College
B.S. Portland State University
M.A. Washington State University
Ph.D. Capella University

Brodnicki, Nora E. (1999)
Art
B.A. Hartwick College
M.A. Syracuse University
M.F.A. State University of New York at New Paltz

Bryant-Trerise, James L. (1998)
English
B.A. University of California
M.A. Claremont Graduate School

Buel, Jessica (2014)
Health & Physical Education/Head Softball Coach
B.S. Western Oregon University
M.A. Western Oregon University

Burgess, George (2015)
Chemistry
M.S. Western Washington University
M.S. Oregon State University

Burnell, Carol H. (2004)
English
B.A. San Francisco State University
M.A. Portland State University

Caldera, Sue J. (2004)
Welding Technology
AWS Certified Worker
AWS Certified Welding Inspector
AWC Certified Welding Educator
Welding Certificate, Mt. Hood Community College

Campbell, Lars E. (2013)
Music
M.M. Portland State University
B.M. Portland State University

Campbell, Robert D. (2012)
Director, Small Business Development Center
A.S. Clark Community College
B.S. Marylhurst University

Carino, Debra A. (2001)
Computer Science
B.A. Boston University
M.S. California State University

Carino, Enrique (2007)
Computer Science
B.S. Portland State University

Chastain, April (2015)
Horticulture
MURP Portland State University
B.S. North Carolina State University

Cheyne, Larry D. (2013)
Associate Dean, Technology, Health Occupations, and Workforce
B.A. Drake University
M.S. California University of Pennsylvania

Clarke, Jaime L. (2015)
Director, Office of Education Partnerships
M.A. Gonzaga University

Cochran, Paul Robert (Bob), P.E. (2010)
Dean, Campus Services
B.S. Portland State University

Coffey, Amanda L. (1998)
English
B.A. Virginia Commonwealth University
M.F.A. Arizona State University

Corona, Maria J. (2006)
Allied Health Sciences/Dental
A.S. Santa Barbara City College
B.A. Marylhurst University
Certified Dental Assistant
EFDA, EFODA and Radiology Certificate

Davis, Ryan M. (2006)
English
B.S. Western Oregon State College
M.A. Mississippi State University
DelGatto, Robert W. (2003)
Manufacturing Technology

DeSau, Carol M. (2001)
Director, Bookstore
B.A. Portland State University

Dickinson, James (1994)
Astronomy
B.S. Oregon State University
M.S. Portland State University
M.S. Portland State University

Dodge, Trevor P. (2004)
English
B.A. University of Idaho
M.A. Illinois State University

Dodson, Carol D. (2001)
Nursing
B.S.N. Sonoma State University
M.S. Oregon Health & Science University

Donnelly, Taylor E. (2012)
English
Ph.D. University of Oregon

Eikrem, James H. (2012)
Theatre Arts
M.F.A. New York University

Ennenga, Jeff. (2016)
Wildland Fire & Forest Management
B.S. University of Alaska Anchorage

Fitzgerald, Greg A. (2012)
Executive Director, Foundation
M.S. Oregon State University

Flippo, Ida F. (1997)
Criminal Justice
B.S. Southern Oregon State College
M.A.T. Willamette University

Flowers, Jackie W. (1997)
History
B.A. Appalachian State University
B.A. University of Tennessee
M.A. University of South Carolina
Ph.D. University of South Carolina

Forney, Beverly J. (2013)
Business/Computer Science
M.Ed. Concordia University
M.A.T. Concordia University

Fouhy, Abe (2014)
Manufacturing

Francis, Eden A. R. (2003)
Chemistry
A.A. Cottey College
A.S. Cottey College
B.S. Linfield College
M.S. University of Oregon

Freeman, Jil (2014)
Instructional Designer
B.S. Portland State University
M.S. Portland State University

Furno, Sharron (2015)
Criminal Justice
M.S. Capella University
B.S. Siena Heights University

Gates, David A. (2015)
Director, IT Operations
M.S. University of Phoenix

Geiger, Darlene J. (2012)
Associate Dean, Academic Foundations & Connections
B.S. University of Wisconsin - LaCrosse
M.S. Portland State University

Gilbert, Jarett
Director, Health Sciences
M.A. New York University
B.A. Franklin University

Ginsburg, John J.
Director, Student Leadership & Engagement
J.D. St. Louis University

Goff, Susan (2014)
Dean, Arts & Sciences
B.S. Oregon State University
M.B.A. Portland State University
Ph.D. Oregon State University

Hall, Adam L. (1998)
Mathematics
B.S. Portland State University
M.S. Portland State University

Hall, Lori. (2015)
Public Information Officer
B.A. University of Minnesota

Hamel, Nicolas N. (1999)
Science
B.S. Oregon State University
Ph.D. Portland State University

Hartsock, Donald G. (1988)
Philosophy
B.A. Colorado State University
M.A. Colorado State University
M.A. University of Allahabad, India

Hatfield, R. Dale (1994)
Business
B.S. Oregon State University
M.B.A. University of Portland

Helm, Lloyd (2013)
Director, Campus Services
Hendricks, Dawn M. (2012)
Early Childhood Education & Family Studies
B.A. Portland State University
M.A. Portland State University
Ed.D. Pepperdine University

Hollingsworth, Kathleen L. (2013)
Music
B.M. Northern Arizona University
M.M. San Francisco State University
D.M.A. University of Miami

Hoover, Sarah E. (2004)
Geology
B.S. North Carolina State University
M.S. University of Oregon

House, Mark A. (2012)
Automotive Technology
A.A.S. Clackamas Community College
Huckestein, James R. (2014)
Vice President, College Services
B.S. Oregon State University
M.B.A. Portland State University

Hughes, Kerrie (2007)
Communication Studies
A.A. Clackamas Community College
B.S. Portland State University
M.A. University of Portland

Hull, Mark R. (2010)
Mathematics
B.S. Portland State University
M.S. Oregon State University

Jones, Melissa L. (2007)
Student Publications/Journalism
B.A. University of California, Los Angeles
M.A. University of Michigan
M.A. Portland State University

Joyce, Laura (2015)
English as a Second Language
M.A. Concordia University
B.S. University of Notre Dame

Keeler, Robert W. (1997)
Anthropology
B.A. University of North Carolina
M.A. Idaho State University
Ph.D. University of Oregon

King, Phillip J. (2010)
Dean, Academic Foundations & Connections
B.S. Portland State University
M.S. Portland State University

Konieczka, Chris M. (2013)
Horticulture
B.S. University of Wisconsin Madison
M.S. University of Wisconsin Madison

Kop, Barry K. (2005)
Science
B.S. University of Oregon
B.A. University of Washington
M.A.T. Portland State University
Doctor of Chiropractic, University of Western States

Kyser, Carrie L. (2001)
Mathematics
B.S. Eastern Michigan University
M.S. Cleveland State University

LaForce, Matthew J. (2006)
Water Environmental Technology/ Engineering Sciences
B.S. Cortland College
M.S. University of Idaho
Ph.D. University of Idaho

Landeen, Thomas (2011)
Automotive
ASE Certified Master Automobile Technician
L1 Advanced Engine Performance Specialist

Lee, Christina (2015)
Nursing
RN-B.S.N. Loma Linda University
M.S.N./M.B.A. University of Phoenix

Lee, Eric F. (2012)
Engineering Science
B.A. Rice University
B.S. Rice University
Ph.D. Cornell University

Lettenmaier, Charles (2015)
Manufacturing
B.S. DeVry University

Leuck, Jay A. (2003)
Automotive Technology
A.S. Southwestern Oregon Community College
B.S. Oregon Institute of Technology

Lewandowski, Kurt L. (1990)
Mathematics
B.S. Southern Utah University
M.S. Oregon State University

Lewis, Eric W. (1993)
Psychology
B.A. California State University, Fullerton
Ph.D. University of Nevada

Littlefield, Jane (2015)
Library
M.A. Saint Mary's University
MLIS Dominican University

Locke, Wesley M. (1998)
Manufacturing Technology
A.S. Clackamas Community College

Lockwood, Rick D. (2005)
Automotive Technology
A.A. College of Sequoias
ASE Master Tech, L1

Long, Kathryn (2015)
English as a Second Language
M.A. Portland State University
B.A. Portland State University

Mach, Susan M. (1997)
English
B.A. Pacific University
M.A. Boston University

Mackey, Terry K. (1998)
Library
B.A. University of Montana
M.L.S. Indiana University
eLearning Design and Development Graduate Certificate

Marks, Brenda A. (1995)
Skills Development
B.S. Oregon State University
M.S. University of North Texas
Ed.D. Oregon State University

Martineau, James B. (2009)
Director, Health, Physical Education & Athletics
B.S. Southern Oregon University
M.S. Western Oregon University

Martinez, Guadalupe L. (2000)
Counseling
B.A. Oregon State University
M.A.I.S. Oregon State University

Mattson, Michael W. (1996)
Manufacturing Technology
B.S. Purdue University
M.A. Oregon State University

Mayer, Lillian M. (1992)
Science
B.A. California State University
M.A. California State University

Maynard, Karen R. (2004)
Allied Health Sciences/Medical Assistant
A.G.S. Clackamas Community College
Registered Medical Assistant (AMT)
RPbT (ASCP)

McAlpine, Jeffrey B. (2007)
English
B.S. Willamette University
M.A. Portland State University

McFarland, Patricia G. (2000)
History
B.A. University of Southern Mississippi
M.A. University of Southern Mississippi
Ph.D. Louisiana State University

McHone, E. Keoni (2004)
Health & Physical Education/Head Track and Field & Cross Country Coach
B.S. Western Oregon University
M.S. Ed. Western Oregon University

Mercer, Kelly (2014)
Mathematics
M.S.T. Portland State University
Meuser, Ellis D. (2004)
Mathematics
B.Th. Northwest Christian College
M.S. Western Oregon University

Milldrum, Jennifer (2011)
Student Accounts Manager/Bursar
B.S. Portland State University

Miller, David W. (1998)
World Languages
B.A. University of Montana
B.A. Portland State University
M.A. Portland State University

Miller, Jennifer (2014)
Computer Science
M.S. Duke University
Miller, Nick A. (2003)
Automotive Technology
A.A.S. Clackamas Community College

Moiso, Michael (2014)
Business
J.D. Willamette University
Montgomery, Kelly A. (2014)
Manager, Custodial Services

Moredock, Paul O. (2012)
ACT-On Grant Project Director
M.S. California State University

Morris, Sarah M. (2004)
Nursing
A.A.S. Portland Community College
B.S.N. Oregon Health & Science University
M.S. University of Portland

Mount, David B. (1992)
English
B.A. California State University, Fullerton
M.A. University of California, Los Angeles

Munro, Suzanne L. (1998)
English as a Second Language
B.A. Westmont College
M.A. Fuller Theological Seminary
M.A. San Francisco State University

Nelson, Tracy M. (2004)
Health & Physical Education
B.S. University of Portland
M.S. Portland State University

Nelson Lewis, Alice E. (2003)
Communication Studies
A.A. Seattle Central Community College
B.A. Portland State University
M.A. Portland State University

Nicoletti, Barbara J. (2012)
Director, Institutional Research & Reporting
Ed.D. Portland State University

Nielson, Lisa M. (2003)
Skills Development
B.A. University of Oregon
M.Ed. Pennsylvania State University

Nolan, Sarah E. (2006)
Library
B.A. University of Washington
M.S. Simmons College

Nordstrom Hull, Rhonda (2003)
Mathematics
A.S. Clackamas Community College
B.S. Oregon State University
M.S. Portland State University

Nurmi, James T. (2011)
Engineering Science
B.A. Gustavus Adolphus College
Ph.D. Oregon Health & Science University

Olsen, Sunny (2007)
Director, Community Education & Harmony Campus
B.A. Azusa Pacific University
M.S.W. Portland State University
Licensed Clinical Social Worker

Parker, Sharon (2007)
Business
B.S. University of Nevada, Las Vegas
M.S. Florida International University
M.B.A. Florida Atlantic University

Patterson, Michael T. (2010)
Science
B.S. University of Michigan
M.S. University of Michigan

Pfeifer, Erich (2014)
Sociology
B.S. Portland State University
M.S. Portland State University

Phelps, John L. (2011)
Welding
A.A.S. Clackamas Community College
American Welding Society (AWS) Certified
I-CAR Welding Certified

Pruyn, Scot (2014)
Mathematics
B.S.E. University of Kansas
M.A. University of Kansas

Reilly, Nicole L. (2002)
Nursing
B.S.N. Clemson University
M.N. University of Washington

Rhoden, Josh G. (2006)
Health & Physical Education/Head Wrestling Coach
A.A. Clackamas Community College
B.A. Pacific University
M.A. Pacific University

Risan, Cynthia A. (2010)
Dean, Technology, Health Occupations & Workforce
B.A. University of Idaho
M.S. Capella University

Robinson, Robin A. (1989)
Health & Physical Education
B.S. Willamette University
M.A.T. Lewis and Clark College

Robuck, Chris M. (2005)
Director, Fiscal Services
B.S. University of Montana
M.B.A. Western State College of Colorado

Rose, Brian S. (2005)
Music Technology

Rosevear, Nicole (2015)
English
M.F.A. Bennington College

Rueb, Richard R. (1995)
Science
B.S. University of South Dakota
M.S. Rutgers University

Sanchez, Camilo M. (2005)
Skills Development
B.A. Mexico State

Schaefer, Stephanie (2012)
Counseling
B.S. University of Oregon
M.A. Pacific University
Psy.D. Pacific University
Licensed Clinical Psychologist, CADC I

Schulz, Polly A. (2007)
Biology
B.A. University of Oregon
M.S. University of Oregon

Scott, Laurette (2014)
Education
B.A. University of Oregon
M.A.T. Lewis & Clark College

Simmons, Bruce E. (2006)
Mathematics
B.S. Duke University
M.S. University of Minnesota

Sims, Casey D. (2007)
Counseling
B.A. Willamette University
M.S. Portland State University

Smith, Vicki M. (2006)
Major Gifts Officer

Smith, Yvonne M. (2006)
Education, Human Services & Criminal Justice
B.S. University of Oregon
M.S.W. Portland State University
Licensed Clinical Social Worker, LCSW

Sprehe, Tara L. (2001)
Associate Dean, Enrollment and Student Services
B.A. University of Oregon
M.S. Miami University

Sweet, Chris (2014)
Registrar/Enrollment Services Operations Manager
B.S. Pacific University
M.S. Portland State University

Thorn, Carol A. (2002)
Nursing
B.S. Oregon Health & Science University
M.S. University of Portland

Tobin, Sandra J. (1998)
Psychology
B.A. Metropolitan State College
M.S. Portland State University

Tracy, Shelly L. (2007)
Director, Utility Training Alliance & Apprenticeships
A.G.S. Clackamas Community College
B.S. Marylhurst University

Truesdell, Joanne (2007)
President
A.A. Clackamas Community College
B.S. Portland State University
M.B.A. University of Portland
Ed.D. Oregon State University

Vergun, Andrea L. (2012)
English as a Second Language
B.S. San Francisco State University
M.A. Portland State University

Wand, Helen F. (2004)
Allied Health Sciences/Clinical Laboratory Assistant
MT(ASCP)SM Certification
B.S. Marylhurst University

Wanner, Paul J. (1992)
Customized Training
A.G.S. Clackamas Community College
A.A.S. Clackamas Community College
State of Oregon Vocational Certificate
ASME Certified Senior GDT Professional
Certified Production Technician AE Certification

Warren, Matthew (2015)
English
M.S. Portland State University
B.S. Portland State University

Wasson, Thomas G. (2008)
Art
B.F.A. University of Hawaii
M.F.A. University of Hawaii

Waters, William J. (2004)
Dean, Curriculum, Planning, and Research
B.S. Portland State University
M.B.A. University of Oregon

Whitten, Christopher D. (2006)
Theatre Arts
B.S. Western Oregon University
Wilhelm, Roni M. (2006)
Associate Director, Workforce Development Services

Woods, Kathleen M. (1983)
Health & Physical Education
B.S. Oregon State University
M.Ed. Oregon State University

Yannotta, Mark A. (1998)
Mathematics
B.S.E. Southeast Missouri State
M.A. University of Missouri

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