



2013-2014  
**Catalog**  
[www.clackamas.edu](http://www.clackamas.edu)





Welcome to Clackamas  
Community College.  
I'm President  
Joanne Truesdell.

Every year, hundreds of Clackamas County residents begin a journey of education or training at CCC. More than 30 years ago, I was one of them.

Clackamas Community College offers our community affordable pathways for transfer students to begin a four-year degree. We provide career technical training leading to jobs or job advancement. We provide classes that help students build essential skills. And we support our local business and industry through customized training and workforce development.

At CCC you'll find instructors who care about your success and are passionate about their teaching. You'll find classrooms where your instructors know your name. And you'll find plenty of opportunities to get involved with CCC beyond the classroom.

CCC is a valuable investment in your future. A recent economic study on the college notes that every dollar spent toward education at CCC results in an increase of \$6.70 cents over lifetime earnings. That's a smart investment!

*Enjoy your educational journey.*

**President Joanne Truesdell**  
CCC, Class of 1982



***Start your Smart Story today.***  
**[www.clackamas.edu](http://www.clackamas.edu)**

# Dates to Remember 2013-2014

Please check a current *Schedule of Classes* to confirm these dates.

## **SUMMER TERM**

**2013**

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Classes Begin .....	Monday, June 24
Independence Day Holiday (College closed).....	Thursday, July 4
Labor Day Holiday (College closed) .....	Monday, September 2
Term ends .....	Thursday, September 5

## **FALL TERM**

**2013**

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In-Service week (College closed Wednesday) .....	September 23-27
Classes begin .....	Monday, September 30
Veterans' Day Holiday (Observed Monday-college closed).....	Monday, November 11
Thanksgiving Holiday (College closed).....	Thurs.-Fri., November 28-29
<i>(Wednesday evening classes, beginning at 4 p.m. or later, are canceled prior to Thanksgiving.)</i>	
Finals week .....	Mon.-Sat., December 9-14
Term ends .....	Saturday, December 14
Holiday (College closed).....	Tuesday-Wednesday, Dec. 24-25
New Year's Day Holiday (College closed) .....	Wednesday, January 1

## **WINTER TERM**

**2014**

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Classes begin .....	Monday, January 6
Martin Luther King Jr. Holiday (College closed) .....	Monday, January 20
Skills Contest .....	Thursday, February 27*
<i>(Day classes canceled at the Oregon City campus only. Evening classes, beginning at 4 p.m. or later, held as scheduled.)</i>	
* Date to be reviewed.	
Finals week .....	Mon.-Sat., March 17-22
Term ends .....	Saturday, March 22
Spring Break.....	March 24-28

## **SPRING TERM**

**2014**

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Classes begin .....	Monday, March 31
Memorial Day Observance (College closed).....	Monday, May 26
Finals week .....	Mon.-Saturday, June 9-14
GED & Adult High School Diploma Graduation Ceremony .....	Thursday, June 12
College Certificate & Degree Graduation Ceremony .....	Friday, June 13
Term ends .....	Saturday, June 14

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

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

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

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

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

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

# Clackamas At A Glance



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

# 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.*



**2011-2012 Enrollment Statistics**

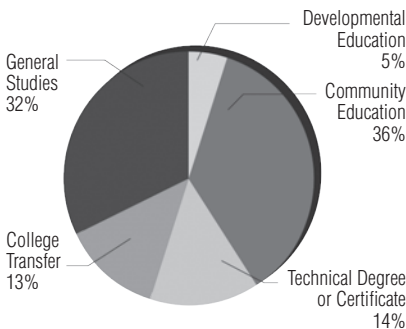
**HEADCOUNT**

Headcount	35,191
Full-time students	2,355
Part-time students	13,561
Non-credit students	19,275
Full-time Equivalence	8,521.24
Average age, all students	36
Average age, full-time students	27
Known Females	13,918
Known Males	13,121
Racial/ethnic minorities in student body	14.27%
Degrees/certificates awarded	1270

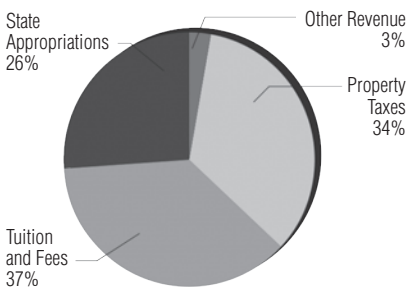
For more information on these and other college statistics, contact the Office of Institutional Research & Reporting at 503-594-6140.

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

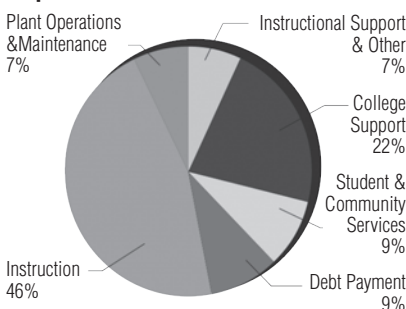
**Enrollment Breakdown by Student Program 2011-2012**



**Revenue - General Fund**



**Expenditures - General Fund**



*CCC at a Glance*

*Numbers reflect 2011-12 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 383,857 (2012 Census)  
District (83%) = 318,478 (2012 Census)

**ENROLLMENT**

**2011-12 Head count:** 35,191

**2011-12 Full-time Equivalence:** 8,521.24

**PROGRAMS**

**Career Technical:** CCC offers one-year Certificate of Completion and two-year Associate of Applied Science degree programs in 108 career technical career areas and General Studies.

**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.

**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 Business Development Center.

**CCC President**

Dr. Joanne Truesdell

**Board of Education**

Ron Adams

Jean Bidstrup

Greg Chaimov

Judy Ervin

Chris Groener

Richard Oathes

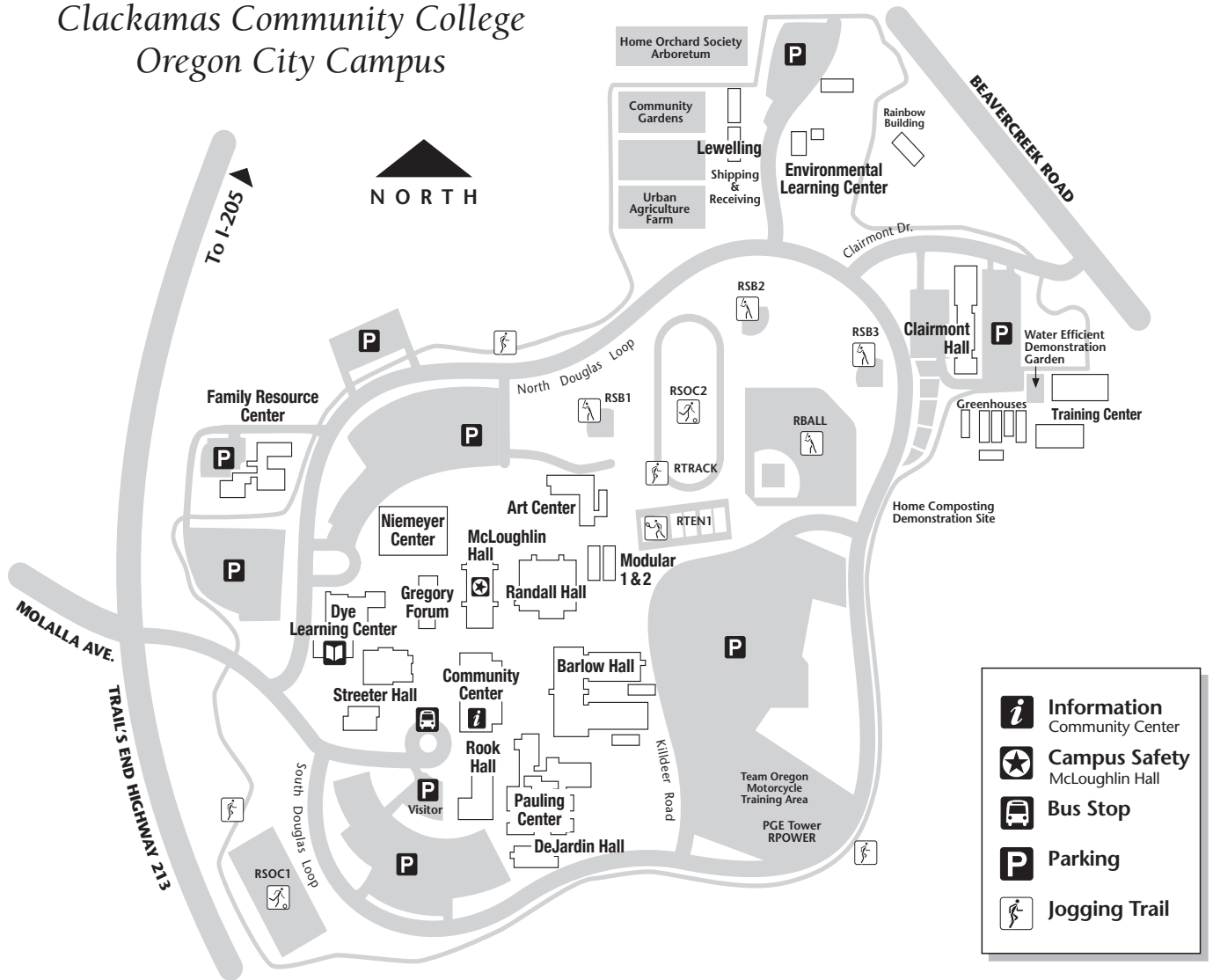
Jane Reid

## Departments and Offices

**College Main Number: 503-594-6000**

<b>Bldg</b>	<b>Department/Office</b>	<b>Number</b>	<b>Bldg</b>	<b>Department/Office</b>	<b>Number</b>
D	ABE/GED . . . . .	503-594-3395	G	Facility Scheduling . . . . .	503-594-3308
RR	Admissions, Registration and Records . . . . .	503-594-6100	RR	Financial Aid Office. . . . .	503-594-6100
B	Advanced College Credit . . . . .	503-594-3208	M	Foreign Language. . . . .	503-594-3244
<b>Academic Advising</b>					
CC	Oregon City . . . . .	503-594-3475	CC	Graduation Evaluation . . . . .	503-594-6100
H	Harmony . . . . .	503-594-0623	R	Gym. . . . .	503-594-3043
W	Wilsonville . . . . .	503-594-0944	H	Harmony Information. . . . .	503-594-0620
T	Apprenticeship . . . . .	503-594-3031	H	Health Sciences . . . . .	503-594-0650
AC	Art . . . . .	503-594-3034	C	Horticulture . . . . .	503-594-3292
R	Athletics. . . . .	503-594-3043	D	Library . . . . .	503-594-3312
B	Automotive . . . . .	503-594-3047	CC	Life & Career Options . . . . .	503-594-3475
<b>Bookstore</b>					
M	Bookstore—Oregon City. . . . .	503-594-3058	B	Manufacturing Technology. . . . .	503-594-3322
H	Bookstore—Harmony . . . . .	503-594-0647	S	Math . . . . .	503-594-3324
S	Business/Computer Science . . . . .	503-594-3071	S	Math/Computer Lab . . . . .	503-594-6310
B	Business Office . . . . .	503-594-3085	N	Music. . . . .	503-594-3337
CC	Cafeteria. . . . .	503-594-6090	P	Pauling Center Gallery . . . . .	503-594-3034
D	Campus Learning Center . . . . .	503-594-3395	R	Physical Education . . . . .	503-594-3043
M	Campus Safety Office. . . . .	503-594-6650	B	President's Office . . . . .	503-594-3002
CC	Career Planning . . . . .	503-594-3475	P	Science. . . . .	503-594-3345
B	Career Technical Education. . . . .	503-594-3441	RR	Scholarship Office. . . . .	503-594-3421
FRC	Child Care Center. . . . .	503-657-9795	M	Social Science. . . . .	503-594-3403
	Child Care Info & Referral. . . . .	503-253-5000	N	Communication/Speech. . . . .	503-594-3155
RR	The Clackamas Print Newspaper. . . . .	503-594-3261	RR	Student Accounts . . . . .	503-594-6100
S	Computer Science . . . . .	503-594-3164	CC	Student Activities/ASG . . . . .	503-594-3040
	Community Garden . . . . .	503-594-3040	CC	Student Government . . . . .	503-594-3040
CC	Cooperative Work Experience. . . . .	503-594-3096	CC	Student Outreach. . . . .	503-594-3284
CC	Counseling. . . . .	503-594-3475	RR	Testing/Assessment Center . . . . .	503-594-3283
C	Criminal Justice/Corrections/Emergency Management . . . . .	503-594-3366	N	Theater/Performing Arts. . . . .	503-594-3153
CC	Disability Resource Center . . . . .	503-594-3181	CC	Tutoring Services . . . . .	503-594-3181
M	Distance Learning. . . . .	503-594-6310	RR	Veterans Educational Benefits . . . . .	503-594-3422
C	Education. . . . .	503-594-6428	DJ	Veterans Education & Training Center . . . . .	503-594-3442
W	Energy & Utility Resource Management . . . . .	503-594-0942	B	Vice President, College Services . . . . .	503-594-3010
RR	English . . . . .	503-594-3254	B	Vice President, Instructional & Student Services . . . . .	503-594-3020
RR	Enrollment Services . . . . .	503-594-6100	P	Water & Environmental Technology . . . . .	503-594-3345
ELC	Environmental Learning Center . . . . .	503-594-3696	T	Welding . . . . .	503-594-3064
			T	Wildland Firefighting . . . . .	503-594-3064
			W	Wilsonville Advising & Testing . . . . .	503-594-0944
			W	Wilsonville Registration/Information . . . . .	503-594-0940

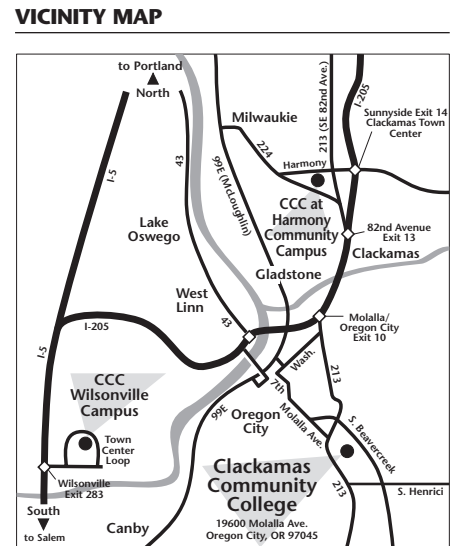
# Clackamas Community College Oregon City Campus



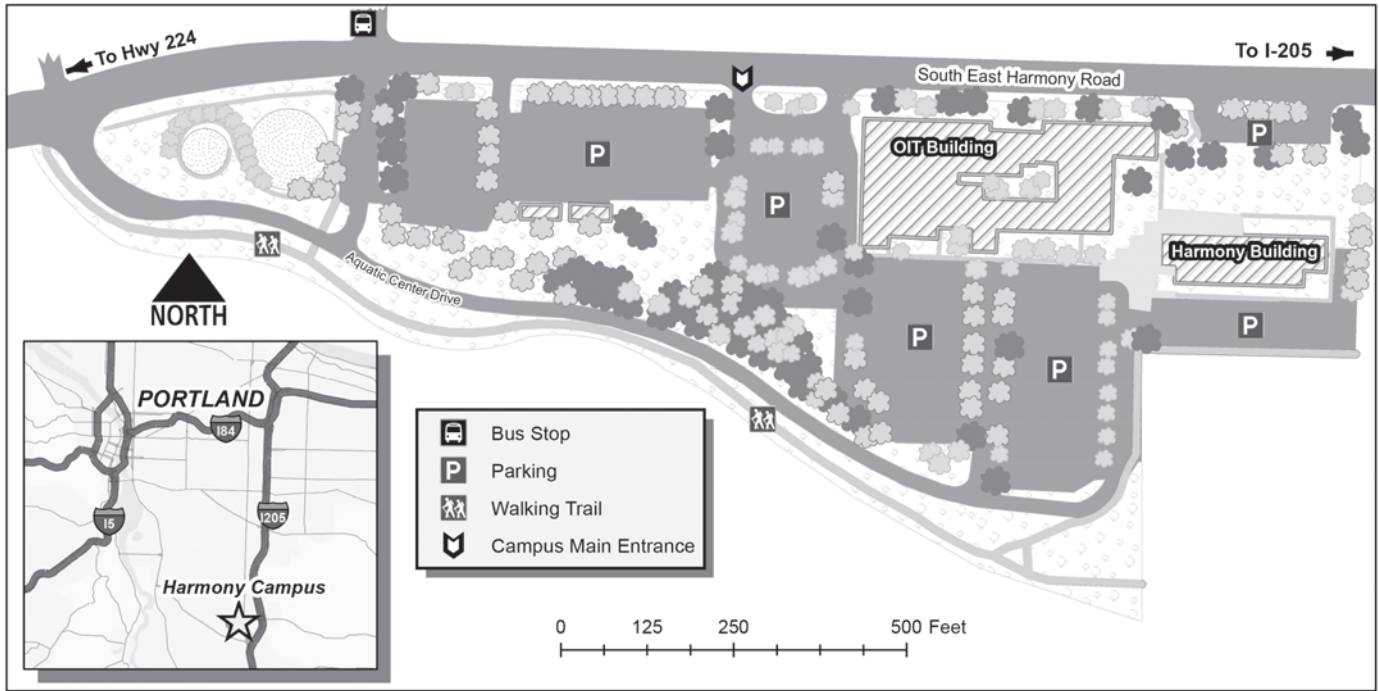
CODE	BUILDING NAME (OC CAMPUS)
AC	Art Center
B	Barlow Hall
C	Clairmont Hall
CC	Community Center
D	Dye Learning Center
DJ	DeJardin Hall
ELC	Environmental Learning Center
FRC	Family Resource Center
G	Gregory Forum
H	CCC at Harmony Community Campus
M	McLoughlin Hall
MOD1&2	Modulars
N	Niemeyer Center
OIT	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

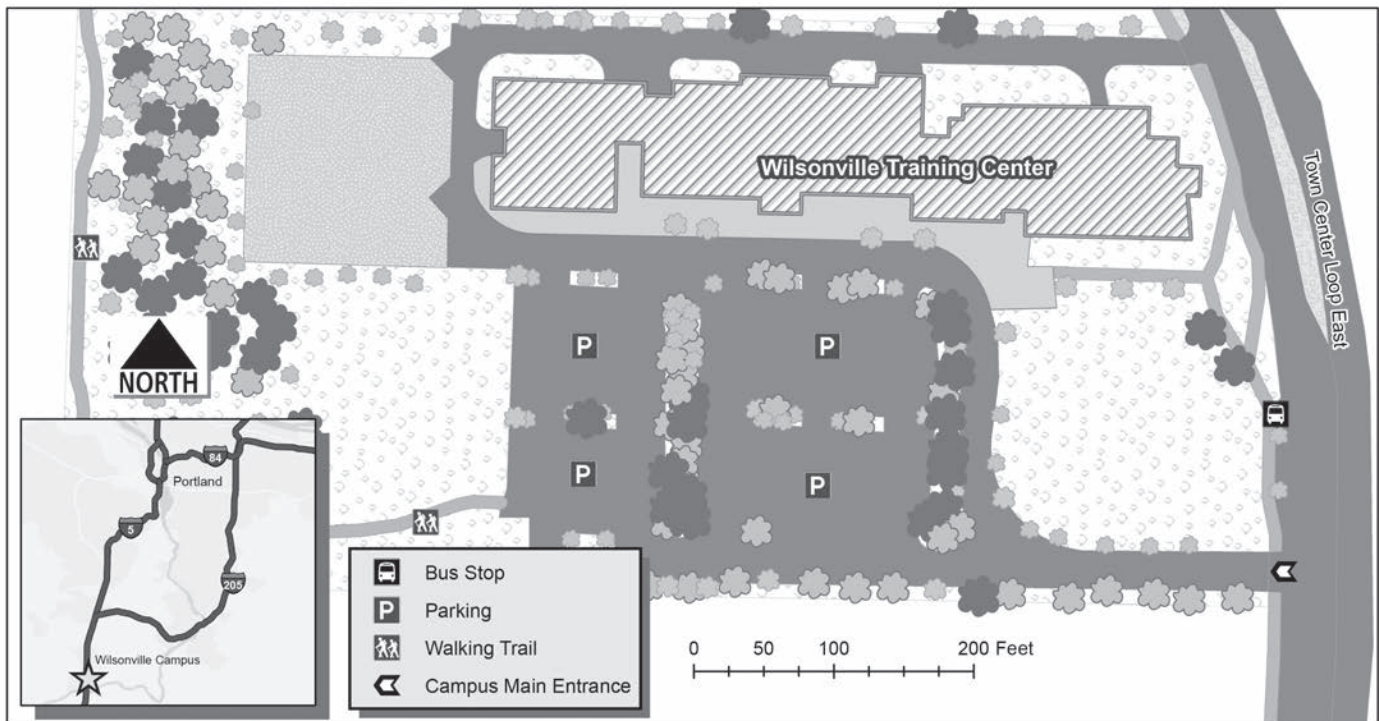


## Clackamas Community College Harmony Community Campus



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

Start your Smart Story Today



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

## Quick Guide to Getting Started

- Apply to CCC.
- Log in to myClackamas (instructions will be emailed to you).
- Submit any previous college work to CCC.
- Apply for financial aid.
- Take your placement tests.
- Attend a New Student Advising (NSA) session and talk with an academic advisor.
- Register for classes.
- Pay your tuition and fees.
- Get your books and go to class!

## Admission

**ENROLLMENT SERVICES CENTERS, ALL CAMPUS LOCATIONS  
OR 503-594-6100**

Clackamas Community College has an open door general 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](http://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 10 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](http://www.clackamas.edu). Click on "Admission & 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 the Registration and Records Office. 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 10 weeks prior to when you want to begin classes.

### Transferring Credits

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 the Registration and Records Office at least 10 weeks prior to the term in which you will begin at CCC so your credits can be evaluated.

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

CCC is approved by the Department of Homeland Security (DHS) to accept qualified students from other countries. Students pursuing a college level course of study can submit TOEFL scores (minimum scores: 500 paper-based, 173 computer-based, 61 internet-based tests), provide previous college coursework or take a placement test upon arrival, to determine placement.

If you need a higher level of English proficiency to succeed in college credit courses, you will be placed in the Program for Intensive English and conditionally admitted to college level courses of study. Application materials and information are available at [www.clackamas.edu](http://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

Allied Health and Nursing:

- 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](http://www.clackamas.edu), Admissions & Aid.

## Degree Partnership Programs

If your goal is a four-year degree, CCC's degree partnerships can help you get there, saving time and money in the process. We offer degree partnerships, or dual enrollments, at three Oregon universities: Oregon State, Oregon Tech, and Portland State. The application process is easy and starts you on a seamless path to your degree. For information about the degree partnership program at CCC, including applications, admissions requirements and more, please visit the Degree Partnerships website at <http://www2.clackamas.edu/degreepartnerships/>

## Programs for Adult Populations and High School Age Students

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

### Basic Skills Development

CCC offers academic assistance to students in all college programs. Emphasis is placed on mastering the basic skills needed to reach educational goals. Programs are available to help students earn a GED, complete a high school diploma and improve basic academic skills. Contact the Dye Learning Center at 503-594-3395 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.

You must be at least 16 years old. 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 48.

## 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 *Schedule of Classes* 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 Campus Learning Center, 503-594-3395.
- To take high school credit recovery classes at CCC that will transfer back to your high school, contact the Dye Learning Center, 503-594-3399.
- 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](http://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.

### IMPORTANT:

***Have you attended other institutions with CCC being the 4th (or greater)? Have you borrowed more than \$26,000 in loans?***

If you answered "yes" to one or both of these questions, please complete the following steps:

- Request your official transcripts from ALL of the institutions you have attended. You do not need to submit a CCC transcript.
- Have them sent to the Evaluations Office.
- After your transcripts have been evaluated, meet with an Academic Advisor and complete an Educational Plan.
- Attach a copy of your Educational Plan to your High Loan Debt/Multiple Institution Attendance Counseling form and submit to the Financial Aid Office.

## 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 refund 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](http://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 \$5,645 a year in 2013-14, 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 Financial Aid Office 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 or [finaid@clackamas.edu](mailto: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 Financial Aid Office for more information at 503-594-6100.

***Scholarships***

503-594-6100 or [scholarships@clackamas.edu](mailto: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 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.

**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](http://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](http://www.clackamas.edu/scholarships)

***Veterans Benefits***

**CCC OREGON CITY CAMPUS  
BILL BROD COMMUNITY CENTER  
503-594-3438**

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

<http://depts.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 <http://depts.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 the Registration and Records Office at least 10 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 will be asked to take one or more COMPASS tests.

### COMPASS 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 COMPASS 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**  
503-594-0944

<http://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 *Schedule of Classes* 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**

*registrar@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 *Schedule of Classes* 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 *Schedule of Classes* 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 open enrollment ends. Generally this is after the first week of the term or 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 Audit a Class

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 Financial Aid Office 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.

## Administrative Withdraw

- If you don't attend your class during the first two weeks of the class, instructors MAY drop you but ARE NOT REQUIRED to do so. 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.

## Tuition and Fees

### 2013-2014 Tuition and Fees

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

TUITION TYPE	RATE	COMMENT
In-state	<b>\$84</b> 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	<b>\$249</b> 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	<b>\$6.50</b> per credit	Supports many CCC student activities including athletics, child care, instructional technology and student government.
College Services Fee	<b>\$20</b> per term	Non-refundable. Applies to credit courses and ABE, ASE, CIV, ESL, GED, and PIE courses. The College Services Fee covers the cost of various services including graduation, parking, a shuttle, testing and transcripts.
Deferred Payment Fee	<b>\$30</b> per term	Applied after the second week of the term if a balance is owed to the college.
Late Registration Fee	<b>\$50</b> per class	Applied to all courses in which registration occurs after the course has begun. This policy begins the third week of the term.
Non-Payment Fee	<b>\$75</b> per term	Applied after the sixth week of the term if a balance is owed to the college.
Non-Refundable Third Party Billing Fee	<b>\$15</b>	Assessed on any student account where CCC is billing an outside business/organization for tuition and charges.
Returned Bank Item	<b>\$25</b> 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 <i>Schedule of Classes</i> .

## 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 *Schedule of Classes*.

**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](http://www.clackamas.edu) or from Enrollment Services.

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

## Paying for Classes

### *How Do I Pay for Classes?*

**Pay Now:** Payment 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 registration request 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 503-594-6100 or [stuaccounts@clackamas.edu](mailto:stuaccounts@clackamas.edu). If you have a question regarding a refund, contact Enrollment Services at 503-594-6100.

### *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.





# Academic Information & Regulations



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

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.
- 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 Financial Aid Office at [finaid@clackamas.edu](mailto:finaid@clackamas.edu) or click on [www.clackamas.edu](http://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 Registration and Records Office at the end of each term. Notification will be sent to students who have not met satisfactory academic standing as follows:

- The first term that a student does not meet academic standing requirements will result in an Academic Alert status. Students in this status will be provided with and encouraged to take advantage of academic support resources to assist them with areas of concern.
- If there is a second consecutive term that a student does not meet one or more of the academic standing requirements, he/she will be placed in an Academic Probation status. Students in this status will 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 by the end of the 5th week of their probation term will be restricted from enrolling in a subsequent term.
- If there is a third consecutive term that a student does not meet one or more of the academic standing requirements, he/she will be placed in an Academic Suspension status. Students in this status will be required to petition to the Dean of Academic Foundations and Connections 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 Dean of Academic Foundations and Connections, 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 taras@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 pass a minimum of three credits during the term in which you challenge a course.
- 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 transcribed academic credit which may be applied toward a degree and/or certificate. May also transfer to four-year colleges.
010 through 099	Courses that result in transcribed academic credit which may or may not be applied toward a degree and/or certificate. May be transferable to other community colleges.*
001 through 008	Continuing education courses, workshops or seminars that carry no credit or application toward a degree and/or certificate. Not transcribed.
009	Classes, seminars, workshops and training resulting in Continuing Education Units (CEUs). These courses are not transcribed as academic credit nor are they applicable toward a degree and/or certificate.

\* Students should consult with a faculty advisor or an academic advisor to verify course eligibility towards degree/certificate requirements.

## Final Exams

Final examinations take place the last week of each term (see the *Schedule of Classes* 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 after sixth week of term, no credit, no grade points	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 Financial Aid Office 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 (I) indicates that the quality of work is satisfactory, but an essential requirement of the course has not been completed. Incompletes are granted only for acceptable reasons and only with the instructor's consent. An Incomplete must be made up within one calendar year from the time it is received or it will convert to an "N" (No Pass) on your transcript, and then the course must be repeated if credit is to be received.

You must make arrangements with the instructor to complete a course in which you've received an Incomplete.

### 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 may 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.

### Honor Recognition

Students achieving a term GPA of 3.5 or better based on nine or more credits graded (A-F) will be recognized at the end of each term for academic excellence on their transcripts.

## Prerequisites

A prerequisite is a course that must be satisfactorily completed before you can enroll in a particular course. The *Schedule of Classes* 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 *Schedule of Classes* 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 <http://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.*



# Student Resources & Support Services



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

# Student Resources & Support Services

## Academic Advising

<http://www.clackamas.edu/Advising/>

### Student Services

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

**CCC HARMONY COMMUNITY CAMPUS,  
HARMONY BUILDING, H125 & H126**  
503-594-0623

**CCC WILSONVILLE CAMPUS**  
503-594-0944

Academic advisors 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 advisors 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.

## Associated Student Government

[www.clackamas.edu/Associated\\_Student\\_Government.aspx](http://www.clackamas.edu/Associated_Student_Government.aspx)

**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.

## Intramurals

503-594-3931

Clackamas offers opportunities for students to participate in a variety of intramural sports activities, including fun runs, softball, basketball, flag football, Badminton, dodge ball, ultimate Frisbee, and soccer, (not all activities are offered each year).

## Athletics

<http://www.clackamas.edu/athletics/>

**CCC OREGON CITY CAMPUS, RANDALL HALL**  
503-594-3043

## Intercollegiate

Clackamas is a member of the Northwest Athletic Association of Community Colleges (NWAACC) and competes in intercollegiate sports with other colleges throughout the Northwest. Intercollegiate athletics for men include cross-country, track, wrestling (NJCAA), basketball and baseball. Women's intercollegiate sports include basketball, softball, volleyball, track, cross country and soccer.

For Intramurals, see Associated Student Government or contact [campact@clackamas.edu](mailto:campact@clackamas.edu)

## Bookstore

<http://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, 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 and tickets are available at the Oregon City store only. 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](http://www.cccbooks.com)

Students may sell their unwanted new and used books for cash at the Bookstore. Books may be worth up to 50% of the original price. 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 *Schedule of Classes*, as well as the website [www.cccbooks.com](http://www.cccbooks.com)

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

## Career Information

<http://www.clackamas.edu/Advising/>

### Student Services

**CCC OREGON CITY CAMPUS, COMMUNITY CENTER**

503-594-3475

**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 counseling
- Many of these resources are available online

## Child Care

<http://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.

## Clubs

<http://depts.clackamas.edu/clubs/>

**CCC OREGON CITY CAMPUS, COMMUNITY CENTER**

503-594-3933

Some of the clubs active on campus include Landscape, NW Collegiate Ministries, Chrysalis, French Club, Spectrum/Gay/Straight Alliance, Horticulture, International, Latter Day Saints Student Association (LDSSA), National Association on Mental Illness (NAMI), Phi Theta Kappa, Scrapbooking, Spanish, Speech and Debate, Veteran's, Welding, and Writers. New interest groups are free to organize under the student constitution and the regulations of the college.

## College Counselors

<http://www.clackamas.edu/Counseling/>

### Student Services

**CCC OREGON CITY CAMPUS, COMMUNITY CENTER**

503-594-3176

**CCC HARMONY COMMUNITY CAMPUS**

503-594-0623, 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

<http://www.clackamas.edu/CommunityGardens/>

**CCC OREGON CITY CAMPUS**

503-594-3040

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. You can also e-mail: [communitygarden@clackamas.edu](mailto:communitygarden@clackamas.edu)

## Computer Labs

**CCC OREGON CITY CAMPUS**

503-594-6632

**CCC HARMONY COMMUNITY CAMPUS**

503-594-0620

The college has computers available for student use, with lab assistance, in several major lab areas. Streeter Hall is the only 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 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

<http://www.clackamas.edu/DisabilityResourceCenter/>

### *Student Services*

**CCC OREGON CITY CAMPUS, COMMUNITY CENTER**

503-594-6357

[drc@clackamas.edu](mailto: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:

- Arrange to meet with the DRC Coordinator.
- Provide the DRC with documentation from a certifying professional that establishes the existence of a current disability and supports the need for accommodations requested.
- Personally request accommodations through the DRC Coordinator.

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



## English as a Second Language Program for Intensive English

<http://www.clackamas.edu/ESL/>

<http://www.clackamas.edu/International/>

**CCC OREGON CITY CAMPUS, DYE LEARNING CENTER**  
503-594-3233

**CCC HARMONY COMMUNITY CAMPUS, H170**  
503-594-0638

Clackamas Community College offers English as a Second Language (ESL) for residents of the community, and the Program for Intensive English (PIE) for international students and international visitors. Both credit and noncredit classes are offered.

## Enrollment Services Center

<http://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

The Enrollment Services Center provides information and assistance with admissions, registration, transcript requests, student ID cards, making payments and general financial aid.

## Financial Aid

<http://www.clackamas.edu/FinancialAid/>

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

Financial Aid services provide students with information, applications and required forms for federal and state student aid programs, all types of scholarship programs, and the various types of aid and assistance offered by Clackamas Community College. General financial aid and scholarship advising sessions on a weekly basis. Also see pages 16-17.

## Scholarships

<http://www.clackamas.edu/Scholarships/>

503-594-3421

The Scholarship Coordinator provides students with information regarding scholarships and provides assistance throughout the application process. The application for CCC Foundation Scholarships can be found beginning January 1st each year at [www.clackamas.edu/scholarships](http://www.clackamas.edu/scholarships) with a deadline of April 30th. Scholarship questions can be emailed to [scholarships@clackamas.edu](mailto:scholarships@clackamas.edu)

## Veterans Benefits

<http://depts.clackamas.edu/veterans>

**CCC OREGON CITY CAMPUS, DEJARDIN HALL, 1ST FLOOR**  
503-594-3438 or [vetinfo@clackamas.edu](mailto:vetinfo@clackamas.edu)

The college provides a wide range of services for Veterans which include:

- Information about benefits
- Education and career information
- Assistance with getting started and being successful
- Referrals to additional resources
- Assistance with necessary paperwork
- VA enrollment and progress certification

If you have ever served in the Armed Forces please contact us to learn more about our veteran services. Please see page 17 for more information.

## Work Study

<http://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

<http://www.clackamas.edu/FoodService/>

### CCC OREGON CITY CAMPUS, COMMUNITY CENTER

A full-service cafeteria operates in the Community Center. Vending machines are located in the Apprenticeship Training Center, Barlow, Clairmont, Community Center, Family Resource Center, Randall, and at the Harmony and Wilsonville campuses.

A coffee shop operates in the cafeteria and offers specialty coffee drinks.

The bookstore has a large assortment of items including frozen meals, healthful snacks, fruit, breakfast choices, candy, juice, soda and many gluten free offerings. Micro-waves are available in the Randall Hall lobby, second floor of Barlow Hall, and the Community Center.

### Haggart Astronomical Observatory

<http://depts.clackamas.edu/haggart>

#### CCC OREGON CITY CAMPUS

503-594-6044

Haggart Astronomical Observatory is a public observatory operated by volunteer amateur astronomers under the auspices of the CCC Science Department. The Observatory houses a 24" reflector telescope and a 6" refractor telescope, and we view a variety of objects such as nebulae, galaxies, star clusters, and any available planets. For further information and hours, please call 503-594-6044 or visit the Observatory's website at <http://depts.clackamas.edu/haggart>

Astronomy courses are offered at CCC through the Science Department; see the listings under Science: Physical Science and Science: Physics in a current *Schedule of Classes*.

## Honor Society

<http://depts.clackamas.edu/clubs/ptk/>

### 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.

## Library

See *The Learning Center*.

## The Learning Center

<http://www.clackamas.edu/Tutoring>

### CCC OREGON CITY CAMPUS, DYE LEARNING CENTER

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

The Learning Center: A welcoming environment, open and accessible to all, that inspires people to engage in lifetime learning. The Learning Center is located in the Dye building on the Oregon City campus and offers the services listed below. Hours: Monday-Thursday, 7:30-8; Friday, 7:30-5; Saturday, 11-3.

### Math Lab

Drop-in (no appointment) math tutoring is available in the Dye 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 math exams. Help is available for all the math classes taught on campus: arithmetic, algebra, statistics, and calculus.

### Writing Center

503-594-6275 or [writing@clackamas.edu](mailto:writing@clackamas.edu)

The Writing Center offers students one-to-one feedback on any writing assignment, for any class or project. 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*

503-594-6275 or [tutoring@clackamas.edu](mailto:tutoring@clackamas.edu)

The Learning Center provides free individual and small group tutoring in many subjects such as accounting and physics. 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.

### *Library*

<http://www.clackamas.edu/Library>

503-594-6042

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.

### *Academic Computing Lab*

<http://www.clackamas.edu/tutoring/>

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 using the campus "GoPrint" system. Business and computer science tutors are available during all open lab hours. The Academic Computing Lab is open Monday- Thursday from 7:30 a.m. to 8 p.m., Friday 7:30 a.m. – 5 p.m., and Saturday 11 a.m. to 3 p.m.

Many academic departments manage their own computer labs for students taking related classes and specialized software for these programs may be available in these labs only. The department labs are open limited hours. Check with your specific department to see if it offers such a lab.

### *Streeter Hall Computing Lab*

<http://cs.clackamas.edu/cs/Streeter/index.php>

The Streeter Hall Computing Lab is a student computer lab that is open Monday – Friday from 7:30 a.m. - 4:30 p.m. and provides Internet access, general-purpose software such as Microsoft Office, and a printer. A project room is available for student groups to work together. Software for some of the academic programs on campus is also available in this lab. You must be a currently registered student to use Streeter Hall Computing Lab.

Additional services are offered in these locations:

- Chemistry Help Center: Pauling 165
- Anatomy and Physiology Study Room: Pauling 145
- General Science Tutoring: DeJardin main floor
- Foreign Language Lab: McLoughlin 244
- Digital Media Lab: McLoughlin 125
- MIDI and Music labs: Niemyer 216, 211
- Horticulture library and computer lab: Clairmont
- Harmony Campus: Math Lab and Writing Center

### *Music*

**CCC OREGON CITY CAMPUS, NIEMEYER CENTER**

503-594-3337

<http://depts.clackamas.edu/music/>

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 Assistants

CCC OREGON CITY CAMPUS, COMMUNITY CENTER  
503-594-6100

Peer Assistants (PA) provide assistance to students throughout the CCC Oregon City campus and in the CCC Cougar Call Center. PA's are chosen each year through an application and interview process. PA's conduct campus tours, assist students with advising, registration, the library, the computer labs, special events and much more. Students interested in applying to be a Peer Assistant should watch for announcements in myClackamas.

## Renewable Energy and Sustainability Center

<http://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  
503-594-3041

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.

## Speech & Debate: Forensics

<http://depts.clackamas.edu/comm-theatre/SpeechHome.htm>

CCC OREGON CITY CAMPUS, NIEMEYER CENTER  
503-594-3155

The Clackamas Community College Forensics (Speech & Debate) Club is comprised of students with a passion for public speaking. The purpose of this club is to amplify students' awareness regarding current events and societal changes through forums and club activities. This club provides a remarkable number of benefits, which include developing better speaking and writing skills, along with increasing individual communication aptitude while developing critical thinking and logical argumentation skills. Our vision is that every team member will be empowered to become an effective communicator, ethical individual, critical thinker, and leader in our community. The team competes with other community colleges and four-year colleges and universities in speaking areas that include: Platform Speeches, Oral Interpretation, Limited Preparation and Parliamentary Debate.

## Student Accounts Receivable

<http://www.clackamas.edu/StudentAccounts/>  
503-594-6100

Student Accounts Receivable services provide students with information regarding amounts owed to the college and education regarding college policy for the payment of tuition/fees. For more information regarding payment and refund of tuition and other charges, see page 21.

## 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.

## Student Life & Leadership

<http://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 housing, transportation, insurance, student government, special events, clubs, intramurals, health and wellness events, 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

<http://thelackamasprint.com/>

[http://depts.clackamas.edu/comm-theatre/  
JournalismStudentPublications\\_000.htm](http://depts.clackamas.edu/comm-theatre/JournalismStudentPublications_000.htm)

<http://depts.clackamas.edu/comm-theatre/Journalism.htm>

**CCC OREGON CITY CAMPUS, ROGER ROOK HALL, RR135**  
503-594-3261 or 503-594-3264

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

## Testing/Assessment

<http://depts.clackamas.edu/testing>

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

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
- Computer Competency Exam
- Oregon Department of Agriculture Exams
- State of Oregon Tax Board Exams

**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.theatreccc.org](http://www.theatreccc.org)

**CCC OREGON CITY CAMPUS, NIEMEYER CENTER**  
503-594-3153

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

### *Clackamas Repertory Theatre*

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

**CCC OREGON CITY CAMPUS, NIEMEYER CENTER**  
503-594-6047

Founded in 2005 as an extension of the CCC Theatre Department, Clackamas Repertory Theatre is a professional theatre company 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](http://www.clackamasrep.org)

### *Streeter Hall Academic Computing Lab*

*See The Learning Center.*

### *Streeter Hall Math Lab*

*See The Learning Center.*

### *Tutorial Services*

*See The Learning Center.*

## VET Center

<http://www.clackamas.edu/Veterans/>

**CC OREGON CITY CAMPUS, COMMUNITY CENTER CC100**  
503-594-3438 or [vetinfo@clackamas.edu](mailto:vetinfo@clackamas.edu)

The VET Center is a service of Clackamas Community College dedicated in gratitude to providing hospitality, advocacy, and the highest quality of service to all Veterans. Our goal is to support every Veterans' transition from warrior, to student, to graduate, and finally to working professional. Clackamas Community College recognizes and honors the Military Veterans of our community and their families by serving those who have served in providing access to Veterans Administration Educational benefits along with information and referral services.

## Workforce Services

<http://www.clackamas.edu/WorkforceServices/>

**CCC OREGON CITY CAMPUS, COMMUNITY CENTER, CC100**  
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 [www.worksourceclackamas.org](http://www.worksourceclackamas.org).

## Writing Center

*See The Learning Center.*

## Student Rights

### *Campus Security Report – Jeanne Clery Act 1*

The “Jeanne Clery Disclosure for Campus Security Policy and Campus Crime Statistics Act” (formerly the Campus Security Act) is a federal law that requires institutions of higher education to disclose campus security information, including crime statistics for the campus and surrounding area. As a current or prospective CCC student or employee, you have a right to obtain a copy of this information. You may review this information by accessing the federal government 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 [http://www.clackamas.edu/Rights\\_and\\_Responsibilities.aspx](http://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. Enrollment status
2. Verification of certificate or degree award
3. Residency status
4. Major
5. Athletic participation – height and weight of team members

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

- a. Student name, address, 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.

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 Registration and Records Office.

### *Release of Information*

Clackamas Community College adheres to and is committed to honoring all state and federal laws pertaining to the privacy and confidentiality of your directory information and academic record. You have the right to restrict access to information if you so choose. Please refer to the following in regards to the release and restriction of directory information.

### *Requesting to Restrict the Release of Directory Information*

You may restrict the release of directory information as mentioned above by submitting a Restrict Directory Information request form to the Registration and Records 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. If you request that this information not be released, CCC will not release to military recruiters or other parties except as noted in this publication or upon written permission from you.

### *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 [http://www.clackamas.edu/Rights\\_and\\_Responsibilities.aspx](http://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:

<http://policy.osba.org/clackcc/AB/ACA%20R%20G1.PDF>

<http://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: [http://policy.osba.org/clackcc/J/JBA\\_GBN%20R%20G1.PDF](http://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.*

*It is the policy of the Clackamas Community College and its Board that there will be no discrimination or harassment on the grounds of race, color, sex, marital status, sexual orientation, religion, national origin, age or disability in any educational programs, activities or employment. Lack of English language skills will not be a barrier to admission and participation in career and technical education programs. 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.*

Section 504 Coordinator, Aimee Elber/disability coordinator  
19600 Molalla Ave., Oregon City, OR, 97045  
503-594-3181

Title II Coordinator, Darlene Geiger/associate dean  
Academic Foundation and Connections  
503-594-3392

Title IX Coordinator, Jim Martineau/director  
Health/PE/Athletics  
503--594-3271

### 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 [http://www.clackamas.edu/Rights\\_and\\_Responsibilities.aspx](http://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](http://www.clackamas.edu)

## 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](http://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 2013-14, the oldest catalog that can be used is 2008-09)
- 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

A student wishing to earn multiple associate degrees must complete 24 credit hours of college level course work that are above and beyond those used to satisfy the previously earned associate degree requirements. Earning multiple certificates of completion requires an additional 12 credits of college level coursework that are above and beyond those used to satisfy the previously earned 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.

Multiple degrees/certificates may be earned as follows:

- One AAOT
- One ASOT– Business
- One AGS
- One or more AAS with differing program areas
- One or more Certificates of Completion with differing occupational content areas

## To Successfully Graduate

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

- Have coursework from other colleges evaluated early. Send all transcripts to Enrollment Services as soon as possible
- 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.



# 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.

### 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 efficiently;
- 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 General Studies (AGS)*

The Associate of General Studies is a two-year 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 55 for Student Guide information. Students interested in the OTM should meet with an academic advisor in Student Services, see page 18.

### *Associate of Applied Science (AAS)*

Associate of Applied Science degrees are career technical in nature and are intended primarily to lead students directly to employment in a specific career. Occupational licensure, career advancement and further study at a four-year college or university are additional opportunities for students earning an AAS degree. Associate of Applied Science degrees are awarded to students who complete the requirements of a specified, two-year career and technical program and are offered in a number of interest areas (see page 57-58).

### *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.

Career Technical programs at CCC provide the skills and work experience students need to qualify for a job upon graduation. Each program is planned with the help of local industry representatives to meet the needs of the current job market. Instruction is provided by trained, experienced professionals, and classes are conducted in an industry-like setting with the latest equipment.

### *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 61-120.

Work-based programs, such as cooperative work experience, clinicals, practicums, or internships, are an important feature of all CCC Career Technical programs. These special arrangements between CCC and local employers provide students with the opportunity to get related work experience in the field of their program of study while earning credit towards a degree or certificate.

### *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:*

- Contact an advisor and a CWE instructor in your area of study. CWE instructor consent is required for registration.
- Complete the CWE application and determine the number of work hours and appropriate credits.
- Register for 1) the appropriate CWE course for program of study and 2) the classroom or online CWE seminar.
- Set and accomplish (with the help of a CWE instructor and work site supervisor) measurable learning objectives.
- 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

For more information drop by Advising in the Community Center, or call 503-594-3096.

Professional upgrade coursework may be applied towards certificates and degrees, and/or may result in business and industry certification. Students are strongly encouraged to consult with the appropriate department to determine how professional upgrade courses may be applied toward their education plans both at CCC and other institutions.

Certificates are awarded to students who complete the specific requirements within a career and technical major. Refer to the Career Technical Program pages of this catalog for more information.



# 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 must be at least 16 years old. Those under 18 are admitted with a referral or a release from compulsory attendance from their local high school. See [www.clackamas.edu](http://www.clackamas.edu), under Programs & Certificates, for information.

### REQUIREMENTS FOR ADULT HIGH SCHOOL DIPLOMA

Complete a minimum of 24 high school units:

#### Subject Units

Language Arts	4
<i>(Shall include the equivalent of one unit in written composition.)</i>	
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 <i>(Any one area or in combination.)</i>	3
Electives	6
<b>Total:</b>	<b>24</b>

Students must develop an education plan and education profile, build a collection of evidence to demonstrate extended application, demonstrate career-related knowledge and skills and participate in career-related learning experiences.

Students must demonstrate proficiency in the Essential-Skill: Read and comprehend a variety of text.

In addition to the credit and competency requirements, students must maintain a 2.0 GPA at the college and 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 *Schedule of Classes* for local GED options.

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





## Student Guide 2013-2014

# Associate of Arts Oregon Transfer Degree (AAOT)

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

Requirements	Courses
	<i>Choose from the following courses to meet degree requirements. All courses must be passed with a C or better.</i>
<b>Writing</b> - 8 credits, including one course of Information Literacy. WR-121 and 122 meet this requirement.	WR-121 and either 122, or 227
<b>Oral Communication</b> - 1 course	COMM-111, 112
<b>Mathematics</b> - 1 course	MTH-105, 111, 112, 211, 212, 213, 243, 244, 251, 252, 253, 254, 256, 261
<b>Health &amp; Physical Education</b> 1 or more courses totaling at least 3 credits.	PE-131, 185, 194, 207, 240, 260, 270, 294 HE-151, 152, 204, 205, 249, 250, 252, 255 HPE-295
<b>GENERAL EDUCATION DISTRIBUTION AREA</b> <b>Arts &amp; Letters</b> - 3 courses from 2 or more disciplines. Each course must be at least 3 credits.	<b>Choose from the following:</b> ART-*101, *102, *103, 115, 116, 117, 131, 132, 133, *204, *205, *206, *225, *226, *227, 250, 251, 252, 253, 254, 255, 291, 292, 293 ASL-*201, *202, *203 BA-130 COMM-*105, *126, 212, *218, *219, 227 ENG-104, 105, 106, *107, *108, *109, 121, 130, 201, 202, 203, 204, 205, *213, 216, 218, *240, *250, *251, *252, *266, 275 FR-*201, *202, *203 GER-*201, *202, *203 HUM-*160, *170, *235 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-270
<b>GENERAL EDUCATION DISTRIBUTION AREA</b> <b>Social Science</b> - 4 courses from 2 or more disciplines. Each course must be at least 3 credits.	<b>Choose from the following list:</b> ANT-*101, *102, *103, *231, *232 EC-115, 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, 202, 203, 205, 206, 225 PSY-200, *205, *214, 215, *219, *221, *231 SOC-*204, *205, *206, *210, *225 SSC-*160, *170, *235 WS-101*
<b>GENERAL EDUCATION DISTRIBUTION AREA</b> <b>Science/Math/Computer Science</b> - 4 courses from at least 2 disciplines including at least 3 laboratory courses in biological and/or physical science.	<b>Choose from the following courses:</b> ASC-200, 201, 202 BI-101, 102, 103, 112, 160 & 160L, 165C & 165CL, 165D, 165T, 204, 211, 212, 213, 231, 232, 233, 234 CH-104, 105, 106, 112, 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, 113, 211, 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
<b>Cultural Literacy</b> - 1 course	Courses meeting the Cultural Literacy requirement are noted with an asterisk.
<b>Elective Courses</b> 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 61-120, 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 121-214.

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

## Student Planner Worksheet 2013-2014

# 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
<b>Writing</b>	8 credits				
<b>Oral Communication*</b>	1 course				
<b>Mathematics</b>	1 course				
<b>Health &amp; Physical Education</b>	1 or more courses totaling at least 3 credits				
<b>Arts &amp; Letters*</b> Select 3 courses from 2 or more disciplines	3 courses				
<b>Social Science*</b> Select 4 courses from two or more disciplines.	4 courses				
<b>Science/Math/Computer Science*</b> Select 4 courses from at least 2 disciplines including 3 laboratory courses in biological or physical sciences.	4 courses				
<b>Elective Courses</b> Any college-level course. May include up to 12 credits of career technical courses.	will vary				
Note: Refer to page 53 for list of approved courses.	<b>TOTALS</b>				

(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 Enrollment 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 3 credits. See list on page 49 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](mailto:advising@clackamas.edu) for more information.

*Student Guide 2013-2014*  
**Associate of Science Oregon Transfer Degree-Business  
 (ASOT-Business)**

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

Requirements	Courses
<i>Choose from the following courses to meet degree requirements. All courses must be passed with a C or better.</i>	
<b>Writing - 8 credits</b>	WR-121 and either 122 or 227
<b>Oral Communication - 3 credits</b>	COMM-111 or COMM-112
<b>Mathematics - 12 credits</b>	MTH-111 or higher, 4 credits of statistics (MTH-243 or MTH-244) are required
<b>Computer Applications</b>	BA-131
Must equal a minimum of 12 credits from at least 2 disciplines	<p><b>GENERAL EDUCATION DISTRIBUTION AREA</b>  <b>Arts &amp; Letters</b>            Courses used in this area must be at least 3 credits.</p> <p><b>Choose from the following:</b>            ART-*101, *102, *103, 115, 116, 117, 131, 132, 133, *204, *205, *206, *225, *226, *227, 250, 251, 252, 253, 254, 255, 291, 292, 293            ASL-*201, *202, *203            BA-130            COMM-*105, *126, 212, *218, *219, 227            ENG-104, 105, 106, *107, *108, *109, 121, 130, 201, 202, 203, 204, 205, *213, 216, 218, *240, *250, *251, *252, *266, 275            FR-*201, *202, *203            GER-*201, *202, *203            HUM-*160, *170, *235            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-270</p>
Must equal a minimum of 12 credits from at least 2 disciplines	<p><b>GENERAL EDUCATION DISTRIBUTION AREA</b>  <b>Social Science</b>            Courses used in this area must be at least 3 credits.</p> <p><b>EC-201 and EC-202 and courses from the following list:</b>            ANT-*101, *102, *103, *231, *232            EC-115, 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, 202, 203, 205, 206, 225            PSY-200, *205, *214, 215, *219, *221, *231            SOC-*204, *205, *206, *210, *225            SSC-*160, *170, *235            WS-101*</p>
Must equal a minimum of 12 credits	<p><b>GENERAL EDUCATION DISTRIBUTION AREA</b>  <b>Science</b>            Courses used in this area must be at least 3 credits.</p> <p><b>Choose from the following courses:</b>            ASC-200, 201, 202            BI-101, 102, 103, 112, 160 &amp; 160L, 165C &amp; 165CL, 165D, 165T, 204, 211, 212, 213, 231, 232, 233, 234            CH-104, 105, 106, 112, 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</p>
	<p><b>Business Specific</b></p> <p>BA-101, 211, 212, 213 and 226</p>
	<p><b>Elective and/or University Specific Requirements</b></p> <p>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 61-120, for a listing of courses that may be included in the 12 credits mentioned above.</p>

*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 121-214.*

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

*Student Planner Worksheet 2013-2014*  
**Associate of Science Oregon Transfer Degree-Business  
 (ASOT-Business)**

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

Requirements	Credits Required	CCC Courses Completed	Transferred Courses	Credits Earned	Credits Needed
<b>Writing</b> WR-121, 122 or 227	8				
<b>Oral Communications</b> COMM-111 or COMM-112	3				
<b>Mathematics</b> MTH-111 or higher, 4 credits of statistics (MTH-243 or MTH-244) are required	12				
<b>Computer Applications</b> BA-131	<i>will vary</i>				
<b>Arts &amp; Letters*</b> Select a minimum of 12 credits from at least two disciplines.	12				
<b>Social Science*</b> Select a minimum of 12 credits from at least two disciplines, including EC-201 and EC-202.	12				
<b>Science*</b> Select a minimum of 12 credits (lab science)	12				
<b>Business Specific</b> BA-101, 211, 212, 213 and 226	<i>will vary</i>				
<b>Elective Courses and/or University Specific Requirements</b> (Refer to your transfer school for specific university requirements. Up to 12 credits of career technical courses may be used.)	<i>will vary</i>				
Note: Refer to page 53 for list of approved courses.	<b>TOTALS</b>				

(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 Enrollment 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 3 credits. See list on page 51 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](mailto:advising@clackamas.edu) for more information.

*Approved Related Instruction Courses*  
**Associate of General Studies • Associate of Applied Science  
 Certificates**

*Associate of Applied Science (AAS)  
 Associate of General Studies (AGS)*

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

- Communication
- Computation
- Human Relations
- Physical Education/Health

*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

**Computation**

Computer Science: CS-133VB, 161, 162, 260

Mathematics: MTH-050, 052, 054, 065 or above (except 199 and 299)

**Human Relations**

Anthropology: ANT-102, 103

Business: BA-285

Education: ED-258

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

Oral Communication: COMM-100, 105, 112, 126, 140, 218, 227

Political Science: PS-203, 205

Psychology: PSY-101, 110, 200, 205, 214, 215, 219, 221, 231, 240

Sociology: SOC-204, 205, 206, 223, 225, 230

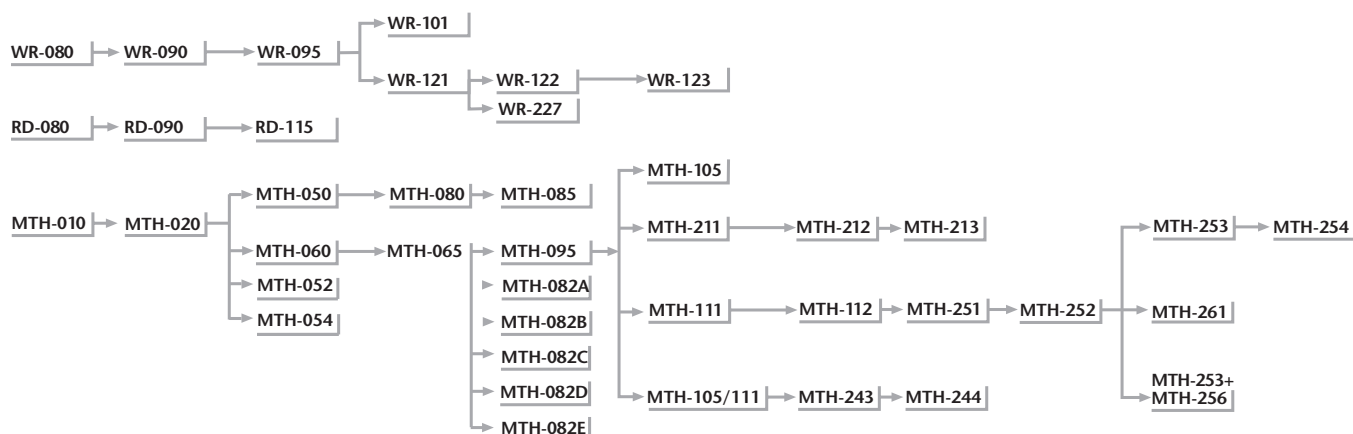
**Physical Education/Health**

Health: Courses with an HE prefix

Physical Education: Courses with an HPE or PE prefix

## *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.



## Student Planner Worksheet 2013-2014

# Associate of General Studies Degree (AGS)

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

	Requirements	CCC Courses Completed	Transferred Courses	Credits Earned	Courses Needed
Complete one course from each of the Related Instruction areas	Communication				
	Computation				
	Human Relations				
	PE/Health				
	Total Related Instruction Credits				
Complete additional college-level coursework for a total minimum of 90 credits combined with the above	Computer Competency*				
	Other College-Level Courses**				
<b>TOTALS</b>					

- Complete a minimum of 90 credits                       Establish cumulative GPA of 2.0 or above  
 Complete at least 23 credits at CCC                       Meet computer competency requirement

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

\* Satisfy the computer competency requirement by passing CS-090 or achieving a score of 45 or higher on the Computer Placement exam.

\*\* College-level course work may include career technical education and/or other courses that exceed basic skills, workplace readiness and fundamental technical skills. Refer to the course description section of the catalog for details, see pages 121-214.

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

*Student Guide 2013-2014*  
**Oregon Transfer Module (OTM)**



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

Requirements		Courses
<i>Choose from the following courses to meet degree requirements.</i>		
<b>Foundational Skills</b>	<b>Writing</b> (2 courses)	WR-121 and either 122, or 227
	<b>Oral Communication</b> (1 course)	COMM-111, 112
<b>Introduction to Disciplines</b>	<b>Mathematics</b> (1 course)	MTH-105, 111, 112, 211, 212, 213, 243, 244, 251, 252, 253, 254, 256, 261
	<b>Arts &amp; Letters</b> (3 courses)	<b>Choose from the following:</b> ART-101, 102, 103, 115, 116, 117, 131, 132, 133, 204, 205, 206, 225, 226, 227, 250, 251, 252, 253, 254, 255, 291, 292, 293 ASL-201, 202, 203 BA-130 COMM-105, 126, 212, 218, 219, 227 ENG-104, 105, 106, 107, 108, 109, 121, 130, 201, 202, 203, 204, 205, 206, 213, 216, 218, 240, 250, 251, 252, 266, 275 FR-201, 202, 203 GER-201, 202, 203 HUM-160, 170, 235 J-211 MUS-105, 111, 112, 113, 204, 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-270
	<b>Social Science</b> (3 courses)	<b>Choose from the following list:</b> ANT-101, 102, 103, 230, 231, 232 EC-115, 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, 202, 203, 205, 206, 225 PSY-200, 205, 214, 215, 216, 218, 219, 221, 231, 238 SOC-204, 205, 206, 210, 225 SSC-160, 170, 235 WS-101
	<b>Science/Math/Computer Science</b> (3 courses)	<b>Choose from the following courses:</b> ASC-200, 201, 202 BI-101, 102, 103, 112, 113, 160 & 160L, 165C & 165CL, 165D, 165T, 204, 211, 212, 213, 231, 232, 233, 234 CH-104, 105, 106, 112, 221, 222, 223 ESR-171, 172, 173 G-101, 102, 103, 145, 148, 201, 202, 203 GS-104, 105, 106, 107 MTH-105, 111, 112, 211, 212, 213, 243, 244, 251, 252, 253, 254, 256, 261 PH-104, 121, 122, 123, 201, 202, 203, 211, 212, 213 Z-201, 202, 203
	<b>Elective Courses</b> Combined with above must equal at least 45 credits.	<b>Courses must be from Arts &amp; Letters, Social Science, or Science/Math/Computer Science disciplines above.</b>

**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.

! 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](mailto:advising@clackamas.edu) for more information.

## Student Planner Worksheet 2013-2014 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
<b>Writing</b> WR-121, and either 122 or 227	2				
<b>Oral Communications</b> COMM 111, 112	1				
<b>Mathematics</b> MTH-105, 111, 112, 211, 212, 213, 243, 244, 251, 252, 253, 254, 256, 261	1				
<b>Arts &amp; Letters</b>	3				
<b>Social Science</b>	3				
<b>Science/Math/Computer Science</b> Select 3 courses including at least one lab course in the biological or physical sciences.	3				
<b>Elective Courses</b> Courses must be from the introduction to Disciplines areas (Arts & Letters, Social Science, or Science/Math/Computer Science)	will vary				
Note: Refer to page 53 for list of approved courses.	<b>TOTALS</b>				


(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](mailto:advising@clackamas.edu) for more information.



## Career Technical Programs

The following chart lists CCC Career Technical degrees and certificates, comprised of related careers, which provide context for academic, technical, and career learning. See page 59 for an alphabetical listing of the following Career Technical programs.

DEGREES	Career Pathway	less than one year	one year	AAS
Accounting AAS				p. 62
Accounting Clerk Certificate			p. 62	
Administrative Office Professional AAS				p. 63
Administrative Office Assistant Certificate			p. 63	
Administrative Office Assistant Training Certificate		p. 64		
Automotive Service Technology AAS				p. 64
Under Car Technician -- Automatic Transmission Certificate	p. 65			
Under Car Technician -- Manual Transmission Certificate	p. 66			
Under Hood Technician Certificate	p. 66			
Business AAS				p. 67
Business Management Certificate			p. 68	
Management Fundamentals Certificate		p. 68		
CAD/CAM Technology AAS				p. 68
Clinical Laboratory Assistant Certificate (limited entry)			p. 69	
Collision Repair and Refinishing Technology AAS				p. 71
Collision Repair and Refinishing Technology Certificate	p. 71			
Computer & Network Administrator AAS				p. 72
Computer & Network Administrator Certificate			p. 72	
Computer Application Support AAS				p. 73
Computer Application Support Certificate			p. 73	
Computer Information Systems: Health Informatics AAS				p. 74
Construction Trades, General Apprenticeship AAS (limited entry)				p. 75
Construction Trades, General Apprenticeship Certificate (limited entry)			p. 75	
Manual Trades Apprenticeship Certificate (limited entry)		p. 76		
Corrections AAS				p. 76
Juvenile Corrections Certificate			p. 77	
Criminal Justice AAS				p. 77
Dental Assistant Certificate (limited entry)			p. 78	
Digital Multimedia Communications AAS				p. 79
Entry Level Multimedia Journalist Certificate	p. 81			
Video Production Technician Certificate	p. 82			
Early Childhood Education & Family Studies AAS				p. 82
Early Childhood Education & Family Studies Certificate			p. 82	
Child Development Associate Certificate	p. 83			
Family Development Certificate	p. 84			
Electrician Apprenticeship Technologies AAS (limited entry)				p. 84
Electrician Apprenticeship Technologies Certificate (limited entry)			p. 84	
Limited Electrician Apprenticeship Technologies Certificate (limited entry)		p. 84		
Electronics Engineering Technology AAS				p. 85
Electronics Engineering Technology Certificate			p. 85	
Emergency Management AAS				p. 86
Emergency Medical Technology Certificate			p. 86	
Employment Skills Training Certificate		p. 87		
Energy & Resource Management AAS				p. 87
Energy & Resource Management Certificate			p. 87	
Utility Trade Preparation: Lineworker			p. 89	
Utility Workforce Readiness Certificate	p. 88			

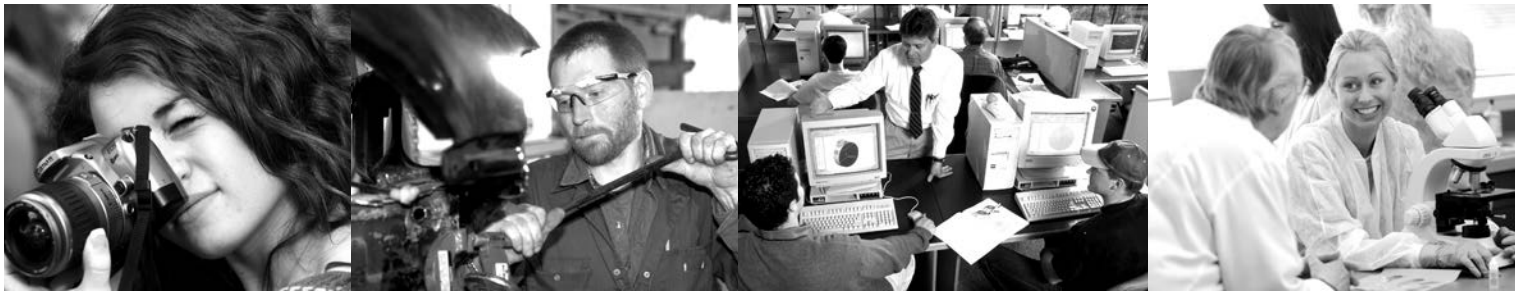
DEGREES	Career Pathway	less than one year	one year	AAS
Fire Science (Wildland) Certificate			p. 90	
Wilderness Survival and Leadership Certificate	p. 91			
Geographic Information Systems (GIS) Technology Certificate			p. 91	
Gerontology Certificate			p. 92	
Horticulture AAS				p. 93
Horticulture Certificate			p. 93	
Irrigation Technician Certificate	p. 94			
Plant Health Care Certificate	p. 95			
Human Resource Management Certificate			p. 95	
Human Resource Management Essentials Certificate	p. 96			
Human Services Generalist AAS				p. 96
Human Services Generalist Certificate			p. 96	
Alcohol & Drug Counselor Certificate	p. 97			
Career Development Facilitator Certificate	p. 97			
Landscape AAS				p. 98
Landscape Practices Certificate			p. 99	
Manufacturing Technology AAS				p. 99
Manufacturing Technology Certificate			p. 100	
CNC Machining Technician Certificate	p. 101			
Marketing & Management AAS				p. 101
Marketing Certificate			p. 102	
Medical Assistant Certificate (limited entry)			p. 102	
Microelectronics Systems Technology AAS				p. 103
Microelectronics Systems Technology Certificate			p. 104	
Music Technology Certificate			p. 104	
Nursing AAS (limited entry)				p. 105
Occupational Skills Training Certificate		p. 108		
Paraeducator Certificate			p. 109	
Professional Truck Driver Certificate		p. 109		
Project Management AAS				p. 110
Project Management Certificate		p. 111		
Project Management Leadership & Communication Certificate	p. 111			
Project Management Tools & Techniques Certificate	p. 111			
Renewable Energy Technology AAS				p. 112
Energy Systems Maintenance Technician Certificate	p. 113			
Renewable Energy Technology Certificate			p. 112	
Retail Management AAS				p. 113
Retail Management Certificate			p. 114	
Western Association of Food Chains (WAFC) Retail Management Certificate		p. 115		
Urban Agriculture Certificate			p. 115	
Water & Environmental Technology AAS				p. 116
Water & Environmental Technology Certificate			p. 116	
High Purity Water Certificate		p. 117		
Web Design & Development AAS				p. 117
Web Design Certificate			p. 118	
Welding Technology AAS				p. 119
Welding Technology Certificate			p. 119	
Entry Level Welding Technician Certificate	p. 120			

## *Career Technical Programs*

Accounting.....62	Human Resource Management.....95
Accounting Clerk.....62	Human Resource Management Essentials.....96
Administrative Office Assistant Training.....64	Human Services Generalist.....96
Administrative Office Professional.....63	Irrigation Technician.....94
Alcohol & Drug Counselor.....97	Juvenile Corrections.....77
Automotive Service Technology.....64	Landscape.....98
Business.....67	Landscape Practices.....99
Business Management.....68	Management Fundamentals.....68
CAD/CAM Technology.....68	Manufacturing Technology.....99
Career Development Facilitator.....97	Marketing.....102
Child Development Associate.....83	Marketing & Management.....101
Clinical Laboratory Assistant.....69	Medical Assistant.....102
CNC Machining Technician.....101	Microelectronics Systems Technology.....103
Collision Repair and Refinishing Technology.....71	Music Technology.....104
Computer Application Support.....73	Nursing.....105
Computer Information Systems: Health Informatics.....74	Occupational Skills Training.....108
Computer & Network Administration.....72	Paraeducator.....109
Construction Trades, General Apprenticeship.....75	Plant Health Care.....95
Corrections.....76	Professional Truck Driver.....109
Criminal Justice.....77	Project Management.....110
Dental Assistant.....78	Project Management Leadership & Communication.....111
Digital Multimedia Communications.....79	Project Management Tools & Techniques.....111
Early Childhood Education & Family Studies.....82	Renewable Energy Technology.....112
Electrician Apprenticeship Technologies.....84	Retail Management.....113
Electronics Engineering Technology.....85	Under Car Technician – Automatic Transmission.....65
Emergency Management.....86	Under Car Technician – Manual Transmission.....66
Emergency Medical Technology.....86	Under Hood Technician.....66
Employment Skills Training.....87	Urban Agriculture.....115
Energy & Resource Management.....87	Utility Trade Preparation: Lineworker.....89
Energy Systems Maintenance Technician.....113	Utility Workforce Readiness.....88
Entry Level Multimedia Journalist.....81	Video Production Technician.....82
Entry Level Welding Technician.....120	Water & Environmental Technology.....116
Family Development.....84	Web Design.....118
Fire Science (Wildland).....90	Web Design & Development.....117
Geographic Information Systems (GIS) Technology.....91	Welding Technology.....119
Gerontology.....92	Western Association of Food Chains (WAFC) Retail Management.....115
High Purity Water.....117	Wilderness Survival and Leadership.....91
Horticulture.....93	



# Career Technical Programs



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

## Accounting

### ▲ Associate of Applied Science Degree

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, although it may articulate with accelerated and nontraditional programs such as those offered by private universities.

#### PROGRAM OUTCOMES

Successful completion of this degree program should prepare students for entry-level employment in accounting and office careers. Students completing this degree may sit for a civil service exam at level GS8. They will analyze, summarize and record financial transactions and prepare summary statements for small and medium-sized businesses, both manually and using computerized systems.

#### CAREERS

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

For information contact Hugo Grimaldi, 503-594-3073 or hugog@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	Solving Communication Problems with Technology	4
BA-213	Decision Making with Accounting Information	4
BA-218	Personal Finance	3
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 requirement (see page 53)	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	Business Report Writing	
or WR-227	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* 92-93

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

## Accounting Clerk

### ■ Certificate

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

Successful completion of this certificate program should prepare students for entry-level bookkeeping tasks, including manual and computerized data entry, transaction analysis, preparation of financial statements and other related office tasks for an accounting firm or department. Students will be prepared to complete typical accounting clerk responsibilities such as journalizing, posting, assisting with tax, audit and other accounting procedures, preparing reports, communicating results and general office responsibilities.

#### CAREERS

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

For information contact Hugo Grimaldi, 503-594-3073 or hugog@clackamas.edu

#### 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	Solving Communication Problems 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

**SUBSTITUTIONAL ACCOUNTING CLERK  
THIRD TERM FOCUS AREA FOR INCOME TAX PREPARERS:**

THIRD TERM		CREDITS
BA-226	Business Law I	4
BA-280	Business/CWE	3
BA-285	Human Relations in Business	4
BT-110	Income Tax Preparation	8

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

## Administrative Office Professional

### ▲ Associate of Applied Science Degree

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**

Successful completion of this degree provide students with the skills necessary for entry-level positions in a variety of administrative or office support roles in business, industry, or the medical or legal fields.

**CAREERS**

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

For information contact Tanya Patrick, 503-594-3076 or tanyap@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	3
BA-226	Business Law	4
BA-285	Human Relations in Business	4
BT-262	Integrated Projects	4

**WINTER TERM**

BA-104*	Business Math	3
BA-205	Solving Communication Problems with Technology	4
BA-206	Management Fundamentals	4
— —	PE/Health requirement (see page 53)	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	4

*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

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**

Students successfully completing this program will be eligible for entry-level employment in a variety of general office positions such as office clerk, receptionist, data entry clerk, office assistant, or general office support leading to positions (with experience) as an administrative assistant, legal assistant or office manager.

*Continued*

*Administrative Office Assistant continued...*

### CAREERS

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

For information contact Tanya Patrick, 503-594-3076 or tanyap@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	General Accounting I	4
or BA-211	Financial Accounting I	
BA-280	Business/CWE	3
BT-161	Word II	3
BT-172	Introduction to Microsoft Outlook	2
BT-216	Office Procedures	4
<i>Credits required for certificate</i>		50

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

## Administrative Office Assistant Training

### ■ Certificate

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

Students successfully completing this program will be eligible for entry-level employment in a variety of general office positions such as office clerk, receptionist, data entry clerk, office assistant or general office support.

### 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 Tanya Patrick, 503-594-3076 or tanyap@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
<i>Credits required for certificate</i>		29

## Automotive Service Technology

### \* Professional Upgrade

### ▲ Associate of Applied Science Degree

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 mechanic studies courses for more in-depth experience. Students may enter the program any term.

### PROGRAM OUTCOMES

Program outcomes include the skills for entry-level employment in the industry as auto technicians maintaining and repairing passenger cars and light trucks, including repairing air conditioning systems, engine and transmission rebuilding, front-end repair and alignment, brake service, starting and charging system repair and the diagnosis and repair of electronic engine controls and safety systems.

### CAREERS

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

For information contact 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	3-4
or MTH-065	Algebra II	



**SPRING TERM**

AM-123	General Auto Repair III	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
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**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 53)	
	(Recommended: PSY-101 or COMM-100)	3
— —	PE/Health requirements (see page 53)	
	(Recommended: HE-252)	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

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.

**PROGRAM OUTCOMES**

Program outcomes include the skills for entry-level employment in the industry as auto technicians maintaining and repairing passenger cars and light trucks, including automatic and manual transmission rebuilding and service, drive axle service and repair, transfer case service and repair, front-end repair and alignment, and starting and charging system repair. 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.

**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 David Bradley, Automotive Department Chair, 503-594-3051, or [bradleyd@clackamas.edu](mailto:bradleyd@clackamas.edu)

**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-131	Chassis Systems	7
AM-122	General Auto Repair II	3
WLD-102	Introduction to Welding	2

**SPRING TERM**

AM-123	General Auto Repair III	3
AM-228	Service Shop Management	4
AM-235	Power Transmission Systems	7

*Credits required for certificate* 43

**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

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.

#### PROGRAM OUTCOMES

Program outcomes include the skills for entry-level employment in the industry as auto technicians maintaining and repairing passenger cars and light trucks, including manual transmission rebuilding, drive axle repair and service, transfer case repair and service, front-end repair and alignment, brake service, and starting and charging system repair. 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.

#### 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 David Bradley, Automotive Department Chair, 503-594-3051, or [bradleyd@clackamas.edu](mailto:bradleyd@clackamas.edu)

#### 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-131	Chassis Systems	7
AM-122	General Auto Repair II	3
WLD-102	Introduction to Welding	2
SPRING TERM		
AM-123	General Auto Repair III	3
AM-235	Power Transmission Systems	7
AM-228	Service Shop Management	4
<i>Credits required for certificate</i>		43

#### 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

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.

#### PROGRAM OUTCOMES

Program outcomes include the skills for entry-level employment in the industry as auto technicians maintaining and repairing passenger cars and light trucks, including engine repair, engine performance, electrical/electronic systems repair, diagnostics, and heating and air conditioning. 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.

#### CAREERS

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

For information, contact David Bradley, Automotive Department Chair at 503-594-3051, or [bradleyd@clackamas.edu](mailto:bradleyd@clackamas.edu)

#### 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	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
<i>Credits required for certificate</i>		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

This 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. Students have the option focusing on Accounting, Human Resource Management, Marketing, or Project Management; or selecting courses from a cross section of these disciplines.

**PROGRAM OUTCOMES**

Upon successful completion of this program, students should be able to demonstrate the skills necessary for entry-level employment as managers or management trainees in areas such as manufacturing, retail management, human resources, project management, or sales. Graduates will be able to work and communicate effectively using common office software applications, understand leadership theory and practice, employ basic accounting practices, and apply management and marketing concepts to a broad variety of business problems.

**CAREERS**

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

For information contact Sharon Parker, 503-594-3075 or [sharonp@clackamas.edu](mailto: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	Solving Communication Problems 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 requirement (see page 53)	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
WR-227	Technical Report Writing	
or BA-225	Business Report Writing	3-4
BA-280	Business/CWE	3
— —	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-133VA, 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

Curriculum 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 certificate program students will be prepared for a variety of entry-level supervisory or management-trainee positions. Students will be prepared to perform management responsibilities such as budgeting, scheduling, planning, organizing, critical thinking, decision-making and managing scarce and diminishing resources.

#### 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](mailto:sharonp@clackamas.edu)

#### BUSINESS MANAGEMENT CERTIFICATE

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-211	Financial Accounting I	4
BA-223	Principles of Marketing	4
WR-121	English Composition	4
<b>WINTER TERM</b>		
BA-131	Introduction to Business Computing	4
BA-156	Business Forecasting	3
BA-206	Management Fundamentals	4
BA-226	Business Law I	4
BA-285	Human Relations in Business	4
<b>SPRING TERM</b>		
BA-205	Solving Communication Problems with Technology	4
BA-217	Budgeting for Managers	3
BA-218	Personal Finance	3
BA-224	Human Resource Management	4
BA-280	Business/CWE	3
<i>Credits required for certificate</i>		55

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

## Management Fundamentals

### ● Career Pathway Certificate

This program is designed for students who seek a foundation of managerial knowledge to support their advancement toward a career in management.

#### PROGRAM OUTCOMES

Students successfully completing this program will be prepared for employment in entry-level supervisory positions. Students will be prepared to engage in budgeting and business planning, to act in conformance with common aspects of employment law, and communicate effectively with co-workers.

#### 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](mailto:sharonp@clackamas.edu)

#### MANAGEMENT FUNDAMENTALS CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BA-205	Solving Communication Problems with Technology	4
BA-206	Management Fundamentals	4
BA-217	Budgeting for Managers	3
BA-224	Human Resource Management	4
BA-285	Human Relations in Business	4
WR-121	English Composition	4
<i>Credits required for certificate</i>		23

## CAD/CAM Technology

### ▲ Associate of Applied Science Degree

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

Program outcomes include entry-level skills for employment as a CNC/CAD/CAM or manufacturing technician to provide a company with the needed computer-aided manufacturing support. The technician's training involves the skills to support initial product design through manufacturing, including design principles, print-reading, solid modeling, CNC machine tool operations and related mathematics.

#### 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](mailto: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.

**CAD/CAM TECHNOLOGY**

**ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

<b>FIRST TERM</b>		<b>CREDITS</b>
CDT-102	Sketching and Problem Solving	3
CDT-108A	Introduction to SolidWorks	3
MFG-104	Print Reading	2
MTH-050**	Technical Mathematics I	3
WR-101**	Communication Skills: Occupational Writing	3

<b>SECOND TERM</b>		
CDT-223	Inventor Fundamentals	
or CDT-225	Advanced SolidWorks	3
MFG-105	Dimensional Inspection	2
MFG-109	Computer Literacy for Technicians	3
MFG-111	Machine Tool Fundamentals I	6
MTH-080**	Technical Mathematics II	3

<b>THIRD TERM</b>		
MFG-106	Applied Geometric Dimensioning & Tolerancing for Manufacturing	3
MFG-112	Machine Tool Fundamentals II	6
MFG-221	Materials Science	3
— —	CAD/CAM program elective	3

**CAD/CAM TECHNOLOGY**

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

<b>FOURTH TERM</b>		<b>CREDITS</b>
MFG-113	Machine Tool Fundamentals III	6
MFG-201	CNC I: Set-up & Operation	4
MFG-204	Computer-Aided Manufacturing I	4
— —**	Human Relations requirement (see page 53)	3

<b>FIFTH TERM</b>		
MFG-202	CNC II: Programming & Operation	4
MFG-205	Computer-Aided Manufacturing II	4
MFG-209	Programming and Automation for Manufacturing	3
— —	PE/Health requirement (see page 53)	3

<b>SIXTH TERM</b>		
MFG-203	CNC III: Applied Programming & Operation	3
MFG-206	Computer-Aided Manufacturing III	3
MFG-211	Machine Tool Fundamentals IV	6
MFG-280	Manufacturing Technology/CWE	4

Credits required for degree 93

**CAD/CAM TECHNOLOGY PROGRAM ELECTIVES**

Any course with a CDT, EET, GIS, MFG, RET, SM 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.

*Clinical Laboratory Assistant*

■ *Certificate*

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 testing according to standard operating procedures. Students are trained in all aspects of the 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.

The CCC Clinical Laboratory Assistant (CLA) program is approved through the National Accrediting Agency for Clinical Laboratory Science (NAACLS).

**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: <http://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.

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-121; 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.

*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.

#### PROGRAM OUTCOMES

Upon successful completion of the program, students are eligible to take the ASCP-Boc Phlebotomy Technician Examination or the American Medical Technologists, Registered Phlebotomy Technician Examination, and/or the American Medical Technologist (AMT) Certified Medical Laboratory Assistant (CMLA) Examination and will be qualified for entry-level employment as a clinical lab assistant/phlebotomist.

#### CLINICAL LABORATORY ASSISTANT APPLICATION REQUIREMENTS

Application packets with admission procedures and requirements are available online, <http://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 178.

For more information, contact: [health-sciences-questions@clackamas.edu](mailto: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	4
CLA-118 Phlebotomy for Clinical Laboratory Assistants	2
WR-101 Communication Skills: Occupational Writing or WR-121 English Composition	3-4
WINTER TERM	
CLA-102 Clinical Laboratory Assistant Skills II	4
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	4
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
<i>Credits required for certificate</i>	51-54

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

Current First Aid and Healthcare Provider level CPR (AHA or ASHI) 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. All other courses are letter grades 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.



## Collision Repair and Refinishing Technology

### ▲ Associate of Applied Science Degree

The 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.

#### PROGRAM OUTCOMES

Program outcomes include entry level skills for employment in collision repair and refinishing, from repair and replacement of body panels on full frame and unibody vehicles, to preparation and finish application. Detailing, customer service, shop safety, and environmental concerns will also be covered.

#### 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.

#### 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		
AB-123	Collision Repair Welding II	2
AB-133	Collision Repair II/Structural	6
ABR-127	Collision Repair Refinishing II*	6
THIRD TERM		
AB-222	Collision Repair III/Advanced Structural	6
ABR-129	Collision Repair Refinishing III	6
— —	Human Relations requirement (see page 53) (Recommended: COMM-100 or PSY-101)	3

#### 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 requirement (see page 53) (Recommended: HE-252)	3
FIFTH TERM		
AB-150	Collision Repair Computerized Estimating-Shoplink	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
<i>Credits required for degree</i>		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

## Collision Repair and Refinishing Technology

### ● Career Pathway Certificate

The Collision Repair and 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*

*Collision Repair and Refinishing continued...*

### PROGRAM OUTCOMES

The certificate focused program will provide entry level skills for employment in collision repair and refinishing, from replacement or repair of body panels on unibody and full frame vehicles, to preparation and finish application. Detailing, customer service, safety and environmental concerns will also be covered.

### 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.

### COLLISION REPAIR AND REFINISHING CERTIFICATE

FIRST TERM		CREDITS
AB-112	Collision Repair Welding I	2
AB-113	Collision Repair I/Nonstructural	6
AB-149	Collision Repair Estimating I	2
ABR-125	Collision Repair Refinishing I	6
<b>SECOND TERM</b>		
AB-123	Collision Repair Welding II	2
AB-133	Collision Repair II/ Structural	6
AB-150	Collision Repair Computerized Estimating-Shoplink	2
ABR-127	Collision Repair Refinishing II*	6
<b>THIRD TERM</b>		
AB-222	Collision Repair III/Advanced Structural	6
ABR-129	Collision Repair/Refinishing III	6
<i>Credits required for certificate</i>		44

\* 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 II.

## Computer & Network Administration

### ■ Certificate

### ▲ Associate of Applied Science Degree

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.

### 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

Program outcomes include skills for entry-level positions in network administration and microcomputer support. Microcomputer specialists install, maintain, upgrade and troubleshoot PC hardware. Network specialists, using software such as Novell, Linux/Unix, or Windows, work with organizational computers to keep hardware and software operational and provide secure access to business information.

### CAREERS

Career opportunities include network specialist, computer service technician, field engineer, customer service engineer, computer technician, and PC/LAN support specialist. For information contact Debra Carino, 503-594-3170 or dcarino@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 I	4
<b>WINTER TERM</b>		
CS-179	Networking I	3
CS-228	Computer Hardware & Repair II	4
CS-240W	Windows Desktop Administration	3
WR-101	Communication Skills: Occupational Writing	3-4
or WR-121	English Composition	
<b>SPRING TERM</b>		
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
MTH-050	Technical Mathematics I	3
— —	Human Relations requirement (see page 53)	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**

<b>FALL TERM</b>		<b>CREDITS</b>
CS-135DB	Microsoft Access	3
CS-280	Computer Science/CWE	3
— —	Computer & Network Administration program elective	6-8
— —	PE/Health requirement (see page 53)	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:

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

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

**Computer Application Support**

■ *Certificate*

▲ *Associate of Applied Science Degree*

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.

**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, and MTH-095 Algebra III. 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**

Program outcomes should include entry-level skills for employment in technical positions using and supporting computer software, including operating systems, web development, spreadsheets, databases and programming software.

**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

**COMPUTER APPLICATION SUPPORT CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
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 I	4
<b>WINTER TERM</b>		
CS-125H	HTML & Web Site Design	3
CS-135W	Microsoft Word	3
CS-179	Networking I	3
CS-240W	Windows Desktop Administration	3
<b>SPRING TERM</b>		
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

*Continued*

Computer Application Support continued...

#### SUMMER TERM

CS-280	Computer Science/CWE	3
MTH-050	Technical Mathematics I	3
WR-101	Communication Skills: Occupational Writing	3-4
or WR-121	English Composition	3
— —	Human Relations requirement (see page 53)	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 requirement (see page 53)	1
— —	Focus Area	4-6

#### SPRING TERM

CS-133VA	Visual Basic for Applications	3
CS-280	Computer Science/CWE	6
— —	Focus Area	4-6

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

#### ACCOUNTING

COURSE		CREDITS
BA-211	Financial Accounting I	4
BA-212	Financial Accounting II	4
BA-213	Decision Making with Accounting Information	4

#### PROGRAMMING

COURSE		CREDITS
CS-161	Computer Science I	4
CS-162	Computer Science II	4
CS-260	Data Structures	4

#### COMPUTER APPLICATION SUPPORT PROGRAM ELECTIVES

Complete 3-4 credits from the following:

BA-120 Project Management Fundamentals  
Any Computer Science course numbered CS-125 or higher

## Computer Information Systems: Health Informatics

### ▲ Associate of Applied Science Degree

The Computer Information Systems: Health Informatics degree program prepares students for technical support in the health industry. Health Informatics is the rapidly developing scientific field that utilizes computer technology in the advancement of health care, and is one of the key components to creating an improved, higher-quality health care system. It is the study of health data collection, storage and communication; data processing into health information suitable for administrative and clinical decision making; and computer and telecommunications technology applied to support these processes. Health Informatics combines computer technologies, information science, clinical practice and business management. Other functions include assisting in the coordination of computer information systems used in hospitals and medical clinics.

#### PROGRAM REQUIREMENTS

Prerequisites for first term students include completed coursework for CS-120 Survey of Computing or BA-131 Introduction to Business Computing, WR-095 Paragraph to Essay or placement into WR-121, and MTH-060 Algebra I placement into MTH-065 Algebra II or higher.

#### PROGRAM OUTCOMES

Students who successfully complete this program will have a background in business management, information systems, computing science and health care that will qualify them for an entry-level position in Information Technology in the health industry.

#### CAREERS

Health Informatics graduates work in many areas including hospitals, medical research laboratories, health insurance companies, Internet companies, engineering firms, health information technology suppliers, consulting companies, etc. They work as database administrators, project managers and project designers, computer programmers, researchers, and systems analysts. Other tasks range from providing technical support for databases, designing new information systems, to procuring and decision-making on purchases. They can also be responsible for evaluating usability, enhancing information systems, ensuring data accuracy, and training other database users.

State universities offer bachelor-, master-, and PhD-level degrees in Health Information Management and related fields.

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

**COMPUTER INFORMATION SYSTEMS: HEALTH INFORMATICS  
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

(n) = non-Clackamas designated courses that will be available through the Oregon community college consortium

<b>FALL TERM</b>		<b>CREDITS</b>
CS-140	Introduction to Operating Systems	
or elective	Computer Information Systems: Health Informatics program elective	4
CS-150	Computer Technician Orientation	
or elective	Computer Information Systems: Health Informatics program elective	3
CS-225	Computer End User Support	3
— —	Computer Information Systems: Health Informatics program elective (Recommended: CS-227)	4
<b>WINTER TERM</b>		
BA-211	Financial Accounting I	4
CS-179	Networking I	3
CS-275	Database Design	3
MA-110	Medical Terminology	3
<b>SPRING TERM</b>		
BA-205	Solving Communication Problems with Technology	4
CS-135DB	Microsoft Access	3
(n)HIM-110	Health Information Tech 1	4
— —	Computer Information Systems: Health Informatics program elective (Recommended: CS-240L)	4
<b>SUMMER TERM</b>		
MTH-050	Technical Mathematics I	3
WR-101	WR-101 Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Computer Information Systems: Health Informatics program elective (Recommended: Additional CS-280 credits)	3
— —	Human Relations requirement (see page 53)	3-4

**COMPUTER INFORMATION SYSTEMS: HEALTH INFORMATICS  
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
CS-161	Computer Science I	4
(n)CS-276	Advanced SQL	4
(n)HIM-182	Health Care Delivery Systems	3
(n)HIM-283	Health Information Systems	4
<b>WINTER TERM</b>		
CS-162	Computer Science II	4
(n)CS-245	Project Management–Information Systems	4
(n)HIM-285	Healthcare Financing & Compliance	3
— —	Computer Information Systems: Health Informatics program elective (Recommended: CS-240W)	3-4
<b>SPRING TERM</b>		
(n)CS-244	Systems Analysis	4
CS-280	Computer Science/CWE	4
— —	Computer Information Systems: Health Informatics program elective	4
— —	PE/Health Requirement (see page 53) (Recommended: HE-252)	1-3

Credits required for degree 96-101

**COMPUTER INFORMATION SYSTEMS: HEALTH INFORMATICS  
PROGRAM ELECTIVES**

<b>COURSE</b>		<b>CREDITS</b>
BA-120	Project Management Fundamentals	3
BA-131	Introduction to Business Computing	4
BA-224	Human Resource Management	4
BI-112	Biology for Health Sciences	4
BI-231	Human Anatomy & Physiology I	4
BI-232	Human Anatomy & Physiology II	4
BI-233	Human Anatomy & Physiology III	4
CS-133VB	Visual Basic.NET 1	3
CS-140	Introduction to Operation Systems	4
CS-150	Computer Technician Orientation	3
CS-179	Networking I	3
CS-225	Computer End Use Support	3
CS-227	Computer Hardware & Repair I	4
CS-229	Networking II	4
CS-240L	Linux Administration	4
CS-240W	Windows Desktop Administration	3
CS-284	Network Security	3
CS-288W	Windows Network Administration	4
(n) HIM-271	Quality Improvement in Health Care	3
(n) HIM-274	Quality Improvement in Health Care Lab	1
(n) HIM-281	Data Management & Analysis I	3
(n) HIM-286	Data Management & Analysis I Lab	2

## Construction Trades, General Apprenticeship

■ *Certificate*

▲ *Associate of Applied Science Degree*

Clackamas Community College offers courses for registered apprentices or those interested in becoming an apprentice. For an apprentice who has attained journeyman status, you may be able to use your journeyman card to receive credit toward an Associate of Applied Science degree.

In order to take apprenticeship training classes, students need to first be accepted into the apprenticeship program by the Joint Apprenticeship Training Council (JATC) for that particular trade. The first step for anyone interested in an apprenticeship program is to logon to [http://egov.oregon.gov/BOLI/ATD/A\\_Atdopen.shtml](http://egov.oregon.gov/BOLI/ATD/A_Atdopen.shtml) and click on the area in which you are interested in applying (Portland, Salem, Eugene, etc.).

The Apprenticeship pathway model provides statewide transfer opportunities, ladder-type certificates of completion, and an optional transfer path into Bachelor of Science degrees at the Oregon Institute of Technology. Both certificates of completion and the AAS degree are based on Oregon State Apprenticeship Training Council and local Joint Apprenticeship Training Committee related training (trade specific) standards. The statewide certificates of completion and AAS degree provide additional access to related training courses across the state for registered apprentices and aligned program outcomes, assessments, and courses.

*Continued*

*Construction Trades, General Apprenticeship continued...*

For information contact Apprenticeship Coordinator, Leslie Donohue, 503-594-3031 or ldonohue@clackamas.edu or Shelly Tracy, Apprenticeship Director, 503-594-0945, or shellyt@clackamas.edu

### PROGRAM OUTCOMES

The statewide certificates of completion and Associate of Applied Science (AAS) credentials are available in the following areas:

#### Construction

- Manual Trades Apprenticeship Certificate of Completion
- Construction Trades, General Apprenticeship Certificate of Completion
- Construction Trades, General Apprenticeship Associate of Applied Science (AAS)
- Optional transfer path into a Bachelor of Science degree in Operations Management at the Oregon Institute of Technology

## Corrections

### ▲ Associate of Applied Science Degree

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, and hands-on experience in a correctional agency to supplement and apply knowledge gained in academic courses.

### PROGRAM OUTCOMES

Successful completion of this degree will provide the skills and knowledge needed to qualify for a job in a federal, state or local corrections system. Corrections professionals may also be qualified to move into other areas of law enforcement or social service.

### 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 information contact Ida Flippo, 503-594-3363 or iflipp@clackamas.edu

### CORRECTIONS ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
CJA-110	Introduction to Law Enforcement	4
CJA-252	Introduction to Restorative Justice	3
WR-121	English Composition	4
— —	Corrections program elective	3

#### WINTER TERM

CJA-120	Judicial Process	3
CJA-243	Drugs, Crime, & the Law	3
MTH-050	Technical Mathematics I	
	or MTH-065 Algebra II	3-4
WR-122	English Composition	4

#### SPRING TERM

CJA-101	Criminology	3
CJA-130	Introduction to Corrections	3
CJA-203	Crisis Intervention	3
CJA-250	Reporting, Recording, & Testifying	4
PSY-219	Introduction to Abnormal Psychology	4

### CORRECTIONS ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
CJA-122	Criminal Law	4
CJA-134	Correctional Institutions	3
CJA-170	Introduction to Field Work in Criminal Justice	3
HE-151	Body & Drugs I	
	or HE-205 Youth Addictions	
	or HE-255 Body & Alcohol	3
— —	Corrections program elective	3

#### WINTER TERM

CJA-201	Juvenile Delinquency	4
CJA-223	Criminal Justice Ethics	3
HS-156	Interviewing Theory & Techniques	3
HS-211	HIV, TB, & Infectious Diseases	1
CJA-280	Criminal Justice/Corrections/CWE	3

#### SPRING TERM

CJA-232	Corrections Casework	3
CJA-281	Criminal Justice/Corrections/CWE	3
HS-216	Group Counseling	3
HS-260	Victim Advocacy & Assistance	4
— —	Corrections program elective	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

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

## Juvenile Corrections

### ■ Certificate

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

Program outcomes include skills for employment in the juvenile justice system. Corrections professionals are usually qualified to move into other areas of law enforcement or social service.

#### 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 information contact Ida Flippo, 503-594-3363 or [iflipp@clackamas.edu](mailto:iflipp@clackamas.edu)

#### JUVENILE CORRECTIONS CERTIFICATE

FALL TERM		CREDITS
CJA-170	Introduction to Field Work in Criminal Justice	3
CS-120	Survey of Computing	4
MTH-050	Technical Mathematics I	
	or MTH-065 Algebra II	3-4
PSY-200	Psychology as a Natural Science	4
PSY-205	Psychology as a Social Science	4
WR-121	English Composition	4
WINTER TERM		
CJA-201	Juvenile Delinquency	3
PSY-215	Introduction to Developmental Psychology	4
PSY-219	Introduction to Abnormal Psychology	4
SOC-205	Social Stratification & Social Systems	4
WR-122	English Composition	4
SPRING TERM		
CJA-101	Criminology	3
CJA-203	Crisis Intervention	3
CJA-280	Criminal Justice/Corrections/CWE	3
CJA-232	Corrections Casework	3
HE-205	Youth Addictions	3
<i>Credits required for certificate</i>		56-59

## Criminal Justice

### ▲ Associate of Applied Science Degree

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

Program outcomes include the skills necessary for entry-level employment with a local law enforcement agency, as well as other opportunities with federal and state agencies.

#### 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 Ida Flippo, 503-594-3363 or [iflipp@clackamas.edu](mailto:iflipp@clackamas.edu)

#### CRIMINAL JUSTICE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

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

*Criminal Justice continued...*

**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
PSY-219	Introduction to Abnormal Psychology	4
WINTER TERM		
CJA-201	Juvenile Delinquency	4
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-212	Criminal Investigation III	3
CJA-222	Procedural Law	3
CJA-281	Criminal Justice/Corrections/CWE	3
HE-151	Body & Drugs I	
or HE-205	Youth Addictions	
or HE-255	Body & Alcohol	3
HS-260	Victim Advocacy & Assistance	4
<i>Credits required for degree</i>		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

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

## Dental Assistant

### ■ Certificate

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 <http://www.clackamas.edu/Programs/Dental-Assistant.aspx>

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. The following is a general outline of the DA requirements; please refer to the most current application for additional information.

**PHASE 1:**

- Completed Dental Assistant program application.
- Placement assessments: Competency in writing, math, and reading as measured by CCC placement assessment scores. Students must either pass WR-095 or place into WR-121; pass MTH-060 or place into MTH-065; and pass RD-090 or place into RD-115 to be eligible to apply or show previous college coursework as documented on official college transcripts. Placements dated no earlier than 2003 will be accepted. Placement testing may be scheduled through the Harmony Campus Testing Center, 503-594-0636; or the main campus Testing Center, 503-594-3283.
- Non-refundable application fee.
- Only completed application packets will be processed allowing applicants to advance to Phase 2.

**PHASE 2:**

- Handwritten essay.

**PHASE 3:**

- Criminal history background check.
- Urine drug/alcohol screen (UDS).
- Candidates are required to pass the criminal history background check & urine drug/alcohol screen.
- DA students will be required to repeat the background check and UDS at their own expense within 30 days of practicum.

**PHASE 4:**

- Health and Physical Exam form.
- Proof of all immunizations.
- Current Tuberculin skin test (PPD) or negative chest x-ray results.
- Current American Heart Association, Health Provider CPR certification.
- Job Shadow (minimum 8 hours) in a dental setting.
- Letter of recommendation.

**ADMISSIONS REVIEW PHASE:**

- Notice of admission decision.

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

**PROGRAM OUTCOMES**

Upon successful completion of the program, students should be eligible to take the necessary exams offered through the Dental Assistant National Board (DANB) and the Oregon Board of Dentistry (OBD). Students will be prepared for entry level employment as a dental assistant.

**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 <http://www.clackamas.edu/Programs/Dental-Assistant.aspx>

For continuing education opportunities for healthcare providers see Healthcare Professional Development (HPD) in the course description section on page 178.

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

**DENTAL ASSISTANT CERTIFICATE**

FIRST TERM		CREDITS
DA-101	Dental Radiology I	3
DA-104	Clinical Procedures I	3
DA-107	Dental Materials I	3
DA-110	Clinical Practicum I	1
DA-115	Dental Science	1
DA-125	Dental Infection Control	1
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	1
DA-105	Clinical Procedures II	3
DA-108	Dental Materials II	2
DA-120	Clinical Practicum II	5
DA-135	Pharmacology/Medical Emergencies	1
THIRD TERM		
DA-106	Clinical Procedures III	2
DA-130	Clinical Practicum III	8
DA-145	Dental Office Procedures	2
MTH-050 or MTH-065	Technical Mathematics I Algebra II	3-4
PSY-101	Human Relations	3
<i>Credits required for certificate</i>		<i>49-51</i>

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

Current Healthcare Provider level CPR (AHA) are required during practicums and must be taken prior to the first term practicum. 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 Multimedia Communications**

▲ *Associate of Applied Science Degree*

The Digital Multimedia 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 the Digital Multimedia Communications degree, students are prepared for a variety of entry level positions in numerous media fields. Students attain knowledge and learn skills to seek careers in creative and support professions within such media industries as film and video, writing for media, graphic design, production, broadcast journalism, web design, and music and sound production. Students will also receive initial preparation to transfer to advanced degrees in their fields of study.

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

**DIGITAL MULTIMEDIA 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 requirement (see page 53)	1
— —	Digital Multimedia Communications program electives	4
WINTER TERM		
DMC-104	Digital Video Editing	4
J-211 or COMM-212	Mass Media & Society Mass Media & Society	4
MTH-065	Algebra II (or higher level of math)	4
COMM-100 or PSY-101	Basic Speech Communication Human Relations	3

*Continued*

*Digital Multimedia Communications continued...***SPRING TERM**

— —	Focus Area courses	3-8
— —	Digital Multimedia Communications program electives	8

**SUMMER TERM**

DMC-280	Digital Multimedia Communications/CWE	3
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**DIGITAL MULTIMEDIA COMMUNICATIONS  
ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR****FALL TERM** **CREDITS**

HUM-233	Electronic Culture	
or SSC-233	Electronic Culture	4
— —	Focus Area courses	4-6
— —	Digital Multimedia Communications program electives	10

**WINTER TERM**

— —	Humanities program electives	7
— —	Focus Area courses	6-8

**SPRING TERM**

BA-146	Entertainment Law & New Media	3
DMC-191	Digital Multimedia Communications Portfolio Project II	
or DMC-192	Digital Multimedia Communications Portfolio Project III	3-4
— —	Focus Area course	4
— —	Digital Multimedia Communications program electives	4
<i>Credits required for degree</i>		90-110

**ADDITIONAL COURSES FROM FOCUS AREA**

Complete all courses from one of the following Focus Areas

**MOTION GRAPHICS & COMPUTER ANIMATION**

<b>COURSE</b>	<b>CREDITS</b>
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	4
ART-221 Flash Animation: Design & Techniques	3
ART-222 Advanced 2D Animation	3
ART-225 Computer Graphics I	3
ART-226 Computer Graphics II	3
CS-195 Flash Web Development	3

**WEB DESIGN**

<b>COURSE</b>	<b>CREDITS</b>
ART-116 Basic Design: Color Theory & Composition	4
ART-221 Flash Animation: Design & Techniques	3
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-195 Flash Web Development	3

**MULTIMEDIA JOURNALISM**

<b>COURSE</b>	<b>CREDITS</b>
J-134 Photojournalism	4
J-215 College Newspaper Lab: Writing & Photography	3
J-216 Reporting	
or J-230 Multimedia Reporting	4
J-220 Introduction to Broadcast Journalism	4
J-221 Broadcast Journalism	
or J-226 College Newspaper: Design & Production	4

**FILM STUDIES**

<b>COURSE</b>	<b>CREDITS</b>
DMC-264 Digital Filmmaking	4
DMC-265 Advanced Digital Filmmaking	4
DMC-195 American Film	
or ENG-195 American Film	4
DMC-295 Revolutionary Film	
or ENG-295 Revolutionary Film	4
ENG-105 Introduction to Literature: Drama	4
WR-262 Introduction to Screenwriting	4

**VIDEO PRODUCTION**

<b>COURSE</b>	<b>CREDITS</b>
ART-106 Animation & Motion Graphics I	
or DMC-106 Animation & Motion Graphics I	3
DMC-205 Directing for Film & Video	4
DMC-242 Field Recording & Sound Design for Media	1
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**

<b>COURSE</b>	<b>CREDITS</b>
DMC-147 Music, Sound, and Moviemaking	
or MUS-147 Music, Sound, and Moviemaking	1
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

**MUSIC & SOUND FOR MEDIA**

<b>COURSE</b>	<b>CREDITS</b>
DMC-242 Field Recording & Sound Design for Media	1
DMC-247 Music, Sound, and Moviemaking	
or MUS-247 Music, Sound, and Moviemaking	3
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-144 Introduction to Electronic Music III	3
MUS-145 Introduction to Digital Sound, Video & Animation	3



**DIGITAL MULTIMEDIA COMMUNICATIONS PROGRAM ELECTIVES**

COURSE		CREDITS
ART-262	Digital Photography & Photo-Imaging	3
BA-101	Introduction to Business	4
BA-120	Project Management Fundamentals	3
BA-124	Negotiation	3
BA-223	Principles of Marketing	4
COMM-112	Persuasive Speaking	4
COMM-150	Competitive Platform Speaking	4
COMM-167	Parliamentary Procedure	4
CS-125P	Computer Publishing	3
CS-125R	Podcasting	3
DMC-180	Digital Multimedia Communications Internship	1-12
DMC-190	Digital Multimedia Communications Portfolio Project I	1-4
DMC-191	Digital Multimedia Communications Portfolio Project II	3
DMC-192	Digital Multimedia Communications Portfolio Project III	4
DMC/ENG-194	Introduction to Film	4
DMC/ENG-296	Adaption: Literature into Film	4
ENG-194	Introduction to Film	4
ENG-279	Focused Drama Study	1
J-134	Photojournalism	4
J-226	College Newspaper: Design & Production	4
MUS-130	Music Media: Sex, Drugs, Rock & Roll	1
MUS-230	Music Media: Sex, Drugs, Rock & Roll	4
TA-101	Appreciation of Theatre Arts	4
TA-102	Appreciation of Theatre Arts	4
TA-103	Appreciation of Theatre Arts	4
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
WR-122	English Composition	4
WR-123	English Composition	3
WR-222	English Composition	4
WR-227	Technical Report Writing	4
WR-240	Creative Writing: Nonfiction	4
WR-241	Creative Writing: Fiction	4
WR-242	Creative Writing: Poetry	4
WR-245	Advanced Poetry Writing	4
WR-246	Advanced Creative Writing: Editing & Publishing	4
WR-247	Advanced Playwriting	4
WR-249	Publishing on Land and Online	1
WR-263	Advanced Screenwriting	4

**HUMANITIES PROGRAM ELECTIVES**

Additional selected humanities electives must be from the following list of prefixes: ANT, ART, DMC, EC, ENG, GEO, HST, J, MUS, PS, PSY, SOC, SSC, WR, WS. Additional Digital Multimedia Communications program electives may be chosen from focus areas not used to meet degree requirements.

**Entry Level Multimedia Journalist**● *Career Pathway Certificate*

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**

Students who successfully complete this certificate should be qualified for entry-level positions such as audio and video equipment technicians; broadcast technician; camera operators; film/video editor; media and communication equipment workers; media and communication workers; or multimedia artists and animators. Skills developed in this certificate program should enhance the worker's employability and advancement potential.

**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	Reporting	
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	DMC Portfolio Project I	1
J-211	Mass Media & Society	4
J-221	Broadcast Journalism	
or J-226	College Newspaper: Design & Production	4
<i>Credits required for certificate</i>		37

## Video Production Technician

### ● Career Pathway Certificate

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

Students successfully completing this program should be able to demonstrate the skills necessary for employment in a variety of entry level positions in a multitude of media fields. Students will be exposed to a basic videography and digital editing necessary for placement in entry-level media positions.

#### 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](mailto: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 DMC Portfolio Project I	1
DMC-242 Field Recording & Sound Design for Media	1
WR-262 Introduction to Screenwriting	4
<i>Credits required for certificate</i>	33

## Early Childhood Education & Family Studies

### ■ Certificate

### ▲ Associate of Applied Science Degree

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:

Upon satisfactory completion of the one-year (four terms) coursework, students will have completed the education/training required for The Oregon Registry - Level 8 in early childhood care and education. Program outcomes should include the skills necessary for participants to become entry-level early childhood practitioners in center and home based settings, private and public schools and child and family support agencies.

On completing the two-year AAS in Early Childhood Education & Family Studies, students will have completed the education necessary to become in-charge practitioners in certain settings (e.g. private preschools and child development centers), paraeducators in public school settings (PK-4<sup>th</sup> Grade) or family support paraprofessionals in various child and family support agencies (public/private). Students will also qualify for Level 9 of The Oregon Registry.

#### 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-4<sup>th</sup> Grade). 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 Terrill, 503-594-6158 or [dawnt@clackamas.edu](mailto:dawnt@clackamas.edu)

**EARLY CHILDHOOD EDUCATION & FAMILY STUDIES CERTIFICATE**

<b>SUMMER TERM</b>		<b>CREDITS</b>
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

<b>FALL TERM</b>		
ECE-150	Introduction to Early Childhood Education	3
ECE-173	Preschoolers & Loss: Divorce & Death	1
ECE-235	Nutrition, Music & Movement	3
HDF-225	Prenatal, Infant & Toddler Development	3
HDF-260	Understanding Child Abuse & Neglect	3
— —	PE/Health requirement (see page 53)	2-3

<b>WINTER TERM</b>		
ECE-121	Observation & Guidance I in ECE Settings	4
ECE-154	Language & Literacy Development	3
ECE-209	Theory & Practicum	3
ECE-240	Lesson & Curriculum Planning	3
HDF-247	Preschool Child Development	3

<b>SPRING TERM</b>		
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	Contemporary American Families	3

*Credits required for certificate* 51-54

**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**

<b>FALL TERM</b>		<b>CREDITS</b>
ECE-221	Observation & Guidance II in ECE Settings	4
ED-100	Introduction to Education	3
ED-150	Creative Activities for Children	3
ED-270	Practicum I/CWE	4

<b>WINTER TERM</b>		
ECE-289	The Project Approach in Early Childhood Education	1
ED-169	Overview of Students with Special Needs	3
ED-271	Practicum II/CWE	4
— —	General electives (any college-level course)	9

<b>SPRING TERM</b>		
ECE-177	Maximizing the Outdoors in ECE Curriculum	3
ED-114	Instructional Strategies in Math & Science	3
ED-246	School, Family & Community Relations	4
ED-272	Practicum III/CWE	4

*Credits required for degree* 96-99

**Child Development Associate**

● *Career Pathway Certificate*

**PROGRAM OUTCOMES:**

The 12 credits of education provides the necessary 120 clock hours of formal childcare education (in eight subject areas) needed to meet the education requirements to obtain the nationally-recognized CDA (Child Development Associate) credential.

Those subject areas are:

- 1 Planning a safe, healthy learning environment
- 2 Steps to advance children's physical and intellectual development
- 3 Positive ways to support children's social and emotional development
- 4 Strategies to establish productive relationships with families
- 5 Strategies to manage an effective program operation
- 6 Maintaining a commitment to professionalism
- 7 Observing and recording children's behavior
- 8 Principles of child development and learning

**CAREERS**

The Child Development Associate (CDA) credential is a nationally-recognized assessment system of standards that defines, acknowledges and evaluates the competency of the ECE practitioner, which in turn helps enhance the quality of early childhood care and education settings. In Oregon, the CDA may be an in-charge early childhood care and education practitioner in family-based settings, as well as in certain child development centers. At Clackamas, we offer this certificate of completion that acts as an initial pathway to obtaining first the CDA credential and then either the one-year certificate and/or two-year AAS degree in Early Childhood Education & Family Studies.

For information contact Dawn Terrill, 503-594-6158 or [dawnt@clackamas.edu](mailto:dawnt@clackamas.edu)

**CHILD DEVELOPMENT ASSOCIATE CAREER PATHWAY CERTIFICATE**

<b>COURSE</b>	<b>CREDITS</b>	
ECE-130	Introduction to CDA	1
ECE-131	Physical Activity/Movement in ECE Programs	1
ECE-132	Positive Child Guidance in ECE	1
ECE-133	Infant-Toddler Development	1
ECE-134	Health & Safety Issues in ECE	1
ECE-135	Self-Esteem in the ECE Classroom	1
ECE-136	Observing & Recording Children's Behavior	1
ECE-137	Developing the Classroom Environment	1
ECE-138	Family-School Relationships	1
ECE-139	Program Management in ECE	1
ECE-140	Preschool Development	1
ECE-141	Outdoors & Children's Learning	1

*Credits required for certificate* 12

## Family Development

### ● Career Pathway Certificate

The Family Development Career Pathway Certificate is designed to provide paraprofessionals, working within child and family support agencies, with competencies to assist families to become self-reliant and interdependent within the scope of their communities.

#### PROGRAM OUTCOMES

Successful completion of this 12-credit certificate prepares students to work as front line family development paraprofessionals in a variety of education and family support agencies.

#### CAREERS

Career opportunities include: family advocates, child care and education practitioners, home visitors and family practitioners, employment and training counselors, community or nutrition workers, home health aides and direct care workers, early intervention staff, outreach workers, crisis intervention staff, intake and social welfare workers, case managers.

For information contact Dawn Terrill, 503-594-6158 or [dawnt@clackamas.edu](mailto:dawnt@clackamas.edu)

#### FAMILY DEVELOPMENT CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
HDF-130	Introduction to Family Development	1
HDF-131	Communication in Family Development	1
HDF-132	Self-Care Skills Family Development Workers	1
HDF-133	Diversity in Family Development	1
HDF-134	Strengths-Based Assessment in Family Life Development	1
HDF-135	Setting & Achieving Goals in Family Development	1
HDF-136	Community Resources in Family Development	1
HDF-137	Home Visiting in Family Development	1
HDF-138	Facilitation Skills in Family Development	1
HDF-280	Practicum I: Family Studies/CWE	3
or ECE-280	Early Childhood Education/CWE	3
<i>Credits required for certificate</i>		12



## Electrician Apprenticeship Technologies

### ■ Certificate

### ▲ Associate of Applied Science Degree

Clackamas Community College offers courses for registered apprentices or those interested in becoming an apprentice. For an apprentice who has attained journey status, you may be able to use your journeyman card to receive credit toward an Associate of Applied Science degree.

In order to take apprenticeship training classes, students need to first be accepted into the apprenticeship program by the Joint Apprenticeship Training Council (JATC) for that particular trade. The first step for anyone interested in an apprenticeship program is to go to: [http://egov.oregon.gov/BOLI/ATD/A\\_Atdopen.shtml](http://egov.oregon.gov/BOLI/ATD/A_Atdopen.shtml) and click on the area in which you are interested in applying (Portland, Salem, Eugene, etc.).

The Apprenticeship pathway model provides statewide transfer opportunities, ladder-type certificates of completion, and an optional transfer path into Bachelor of Science degrees at the Oregon Institute of Technology. Both certificates of completion and the AAS degree are based on Oregon State Apprenticeship Training Council and local Joint Apprenticeship Training Committee related training (trade specific) standards. The statewide certificates of completion and AAS degree provide additional access to related training courses across the state for registered apprentices and aligned program outcomes, assessments, and courses.

For information contact Apprenticeship Coordinator, Leslie Donohue, 503-594-3031 or [ldonohue@clackamas.edu](mailto:ldonohue@clackamas.edu) or Shelly Tracy, Apprenticeship Director, 503-594-0945, or [shellyt@clackamas.edu](mailto:shellyt@clackamas.edu)

#### PROGRAM OUTCOMES

The statewide certificates of completion and Associate of Applied Science (AAS) credentials are available in the following areas:

#### Electrician

- Limited Electrician Apprenticeship Technologies Certificate of Completion
- Electrician Apprenticeship Technologies Certificate of Completion
- Electrician Apprenticeship Technologies Associate of Applied Science (AAS)
- Optional transfer path into a Bachelor of Science degree in Operations Management at the Oregon Institute of Technology

# Electronics Engineering Technology

## \* Professional Upgrade

### ■ Certificate

### ▲ Associate of Applied Science Degree

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

Program outcomes include the knowledge and skills for entry-level employment as a technician in a wide variety of industries, such as circuit board manufacturing, medical electronics manufacturing and electronic equipment manufacturing and service.

#### 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 53)	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
<b>FIFTH TERM</b>		
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
<b>SIXTH TERM</b>		
EET-230	Laser and Fiber Optics	3
MFG-133	Programmable Logic Controllers	3
PH-203**	General Physics	5
SM-280	Electronics & Microelectronics/CWE	2
— —	PE/Health requirement (see page 53)	3

Credits required for degree 104

\*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 Mike Mattson, 503-594-3322 or mattsonm@clackamas.edu

## Emergency Management

### ▲ Associate of Applied Science Degree

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: <http://depts.clackamas.edu/crimjust/>

For information call 503-594-3207.

#### PROGRAM OUTCOMES

Successful completion of this degree program will enable students to demonstrate the entry-level skills needed to acquire positions within public or private sector agencies responsible for preparedness planning and managing of any type of life-threatening disaster.

#### CAREERS

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

For information contact Yvonne Smith, 503-594-3207 or [yvones@clackamas.edu](mailto:yvones@clackamas.edu)

## Emergency Medical Technology

### ■ Certificate

Emergency Medical Technicians (EMTs) give immediate care to critically ill or injured people in the prehospital 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 certified by the state through the Department of Health and Human Services, EMS & Trauma Systems Section (DHS 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 and national EMT-Basic certification.

#### PROGRAM OUTCOMES

The EMT program is designed to prepare students to begin their careers in Emergency Medical Services (EMS) and continue their education to the paramedic level. The EMT-Basic course prepares students to test for both national and state certification. The EMT-Intermediate course prepares candidates to test for Oregon certification.

#### CAREERS

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

For continuing education opportunities for healthcare providers see Healthcare Professional Development (HPD) in the course description section on page 178.

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 Basic-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
CS-120	Survey of Computing	4
EMT-102	EMT Basic-Part II	5
MA-110	Medical Terminology	3
WR-121	English Composition	4
SPRING TERM		
BI-233	Human Anatomy & Physiology III	4
CJA-203	Crisis Intervention	3
EMT-107	EMT Rescue	3
EMT-108	Emergency Response Patient Transportation	2
EMT-109	Emergency Response Communication/Documentation	2
SOC-205	Social Stratification & Social System	4
<i>Credits required for certificate</i>		58

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

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

A certificate is earned by completing at least 12 credits of occupationally related college-level classes. For every three occupationally related credits, one cooperative work experience credit may be included in the plan.

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

Program outcomes are specific to the student's goals and may include:

- Individualized plan detailing the college courses to be completed and the knowledge and skills to be learned.
- Occupation specific knowledge and skills developed on the job and in the classroom.
- Basic employment skills, job search skills, career management skills and/or an introductory contact with an employer(s) and/or hiring manager(s).

#### CAREERS

Completion of an EST certificate can impact any career.

For information please contact Student Academic Support Services Department, 503-594-3475, or <http://www.clackamas.edu/Advising/>

## Energy & Resource Management

### ■ Certificate

#### ▲ Associate of Applied Science Degree

The Energy & Resource Management (ERM) program prepares students for entry-level careers in the utility, energy and resource industries. Course work covers traditional and alternative energy generation, distribution, operation, management and leadership. The ERM program is endorsed by the Utility Training Alliance (UTA) comprised of Portland General Electric, PacifiCorp, Clackamas Community College, and other regional utility partners.

#### PROGRAM REQUIREMENTS

Students who wish to participate in the Energy & Resource Management (ERM) program are welcome to register for the ERM classes once all the course prerequisites are met.

Students are advised of the necessary utility industry standards for math, writing, reading, and computer skills required for the successful completion of this program.

*Prior to registration in the ERM courses, students must meet the following:*

- Achieve placement in RD-115, WR-095 and MTH-060 or provide proof of a comparable assessment.
- Meet with EURM Department Advisor or Wilsonville Campus Director.

#### PROGRAM OUTCOMES

Successful completion of this program should enable students to demonstrate the core knowledge and skills needed to acquire entry level positions within the utility, energy and resource industries. Students have the opportunity to earn the National Career Readiness Certificate (NCRC), along with a CPR/First Aid certification. Students can also earn a Project Management Leadership & Communication Career Pathways Certificate (See page 111.) with the successful completion of second year coursework and applying with a separate petition for graduation.

#### CAREERS

Career opportunities may include: customer service representative, technician operator, support personnel, utilities assistant, resource specialist, business administration and project management.

For information contact: Angie Sandercock, EURM Department Advisor, 503-594-0944 or [angies@clackamas.edu](mailto:angies@clackamas.edu) or Shelly Tracy, Wilsonville Campus Director, 503-594-0945 or [shellyt@clackamas.edu](mailto:shellyt@clackamas.edu)

*Energy & Resource Management continued...*

### OREGON TECH TRANSFER AGREEMENT

Graduates from CCC's Energy & Resource Management AAS Degree will transfer with a minimum of 60 credits to Oregon Tech's Bachelor of Applied Science (BAS) in Technology and Management program. Admission to Oregon Tech is not guaranteed. Transfer students must apply for admission to Oregon Tech in accordance with policies and procedures of Oregon Tech. Students are responsible for notifying the Oregon Tech Admissions and Registrar's Office to ensure their credits transfer. Students must be attending Clackamas Community College during the current catalog year and must enroll at Oregon Tech within three years of the current catalog year.

### ENERGY & RESOURCE MANAGEMENT CERTIFICATE:

FIRST TERM		CREDITS
BA-131	Introduction to Business Computing	
or elective	Energy & Resource Management program elective	3-4
ERM-100	Orientation to Energy & Resource Management	3
ERM-107	Career Portfolio	3
ERM-108A	Career Industry Marketing Strategies	2
ERM-171	Energy Industry Health Awareness	3
HE-261	Community CPR	1
WR-121	English Composition	4
<b>SECOND TERM</b>		
ERM-101	Energy & Resource Technology I: Intro	3
ERM 102	Energy & Resource Technology II: Electricity	3
PSY-101	Human Relations	3
WR-122	English Composition	
or elective	Energy & Resource Management program elective	4
<b>THIRD TERM</b>		
EC-201	Principles of Economics: Micro	4
ERM-103	Energy & Resource Technology III: Generation	3
ERM-180	Energy & Resource Management/CWE	3
— —	Computation requirement (see page 53)	3-5
<i>Credits required for certificate</i>		45-48

### ENERGY & RESOURCE MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

### ENERGY & RESOURCE MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FOURTH TERM		CREDITS
BA-122	Teamwork	3
BA-123	Leadership & Motivation	3
ERM-201	Energy Applications I: Renewable Energy Resources	4
— —	General elective (any course 100 level or above)	4-5
<b>FIFTH TERM</b>		
BA-285	Human Relations in Business	4
COMM-111	Public Speaking	4
ERM-202	Energy Applications II: Leadership	4
— —	General elective (any course 100 level or above)	4-5

### SIXTH TERM

BA-124	Negotiation	3
BA-205	Solving Business Communication Problems with Technology	4
ERM-203	Energy Applications III: Seminar	4
— —	General elective (any course 100 level or above)	4-5
<i>Credits required for degree</i>		90-96

### ENERGY & RESOURCE MANAGEMENT PROGRAM ELECTIVES

Any ERM course not already required in the program or any course with a CDT, EET, GIS, MFG, RET prefix.

## Utility Workforce Readiness

### ● Career Pathway Certificate

The Utility Workforce Readiness Career Pathway program provides training that prepares students for entry-level positions in technical careers within the utility industry. It is important to be physically fit, to work well in a team environment, adhere to safety requirements and maintain ethical conduct in all work practices. The Utility Workforce Readiness Career Pathway Certificate is offered as part of the Energy and Resource Management Program. This certificate is endorsed by the Utility Training Alliance (UTA) comprised of Portland General Electric (PGE), PacifiCorp, Clackamas Community College, and other regional utility partners.

This program is approved by the Oregon State Apprenticeship & Training Council (OSATC) Division of the Bureau of Labor & Industries (BOLI) as an authorized Pre-Apprenticeship program.

### PROGRAM REQUIREMENTS

Students who wish to participate in the Utility Workforce Readiness program are welcome to register for the ERM classes once all prerequisites are met.

Students are advised of the necessary utility industry standards for math, writing, reading, computer skills and the physical capability required for the successful completion of this program.

*Prior to registration in the ERM courses, students must meet the following:*

- Must be 18 years or older
- Possess a valid driver's license
- Able to obtain a CDL permit
- Capable of strenuous physical activity
- Achieve placement in RD-115, WR-095 and MTH-060 or provide proof of a comparable assessment
- Meet with EURM Department Advisor or Wilsonville Campus Director



**PROGRAM OUTCOMES**

Successful completion of this program should enable students to demonstrate the core knowledge and hands-on skills needed to acquire entry level positions within the utility industry. Accept personal responsibility with compliance to all laws and performance standards. Produce reliable results that blend safety and performance into a unified work practice. General knowledge and experience with: initial groundman work, utility tools of the trade, ropes and knots, trenching and shoring and rigging. Equipment includes: forklift, excavator, digger derrick and bucket truck. Health and Safety Training includes: flagging, CPR/First Aid, OSHA 10 and CDL permit. Students will also have the opportunity to earn the National Career Readiness Certificate (NCRC.)

**CAREERS**

Career opportunities may include: ground worker, general laborer, flagger, service technician, store room, general maintenance and repair workers, hydro maintenance, telcom construction or technical assistant. It also will prepare students to enter a utility industry apprenticeship.

For information contact: Angie Sandercock, EURM Department Advisor, 503-594-0944 or angies@clackamas.edu or Shelly Tracy, 503-594-0945 or shellyt@clackamas.edu

**UTILITY WORKFORCE READINESS CAREER PATHWAY CERTIFICATE**

FIRST TERM		CREDITS
ERM-100	Orientation to Energy & Resource Management	3
ERM-107	Career Portfolio	3
ERM-108A	Career Marketing Strategies	2
ERM-171	Energy Industry Workplace Health Awareness	3
ERM-172	Energy Industry Safety Development	3
HE-261	Community CPR	1
SECOND TERM		
ERM-101	Energy & Resource Technology I: Intro	3
ERM-102	Energy & Resource Technology: Electricity	3
ERM-173	Energy Industry Performance Development	6
PSY-101	Human Relations	3
<i>Credits required for certificate</i>		30

## Utility Trade Preparation: Lineworker

### ■ Certificate

The Utility Trade Preparation: Lineworker program prepares students to enter the outside line construction industry with the core required skills, knowledge and safety awareness for initial employment requirements. It is important to be physically fit, work well in a team environment, adhere to safety requirements and maintain ethical conduct in all work practices. Each term has a focus that prepares the student for the following term. First term: Introduction to the Utility Industry and Health/Safety Awareness. Second term: Introduction to job site applications, competent use of heavy equipment, job search and interviewing skills. Third term: Fundamentals of daily ground worker responsibilities, initial pole climbing and basic electricity.

This certificate is endorsed by the Utility Training Alliance (UTA) comprised of Portland General Electric (PGE), PacifiCorp, Clackamas Community College, and by other regional utility partners.

This program is approved by the Oregon State Apprenticeship & Training Council (OSATC) Division of the Bureau of Labor & Industries (BOLI) as an authorized Pre-Apprenticeship program.

**PROGRAM REQUIREMENTS**

Students who wish to participate in the Utility Trade Preparation: Lineworker program are welcome to register for the ERM classes once all prerequisites are met.

Students are advised of the necessary utility industry standards for math, writing, reading, computer skills and the physical capability required for the successful completion of this program.

*Prior to registration in the ERM courses, students must meet the following:*

- Must be 18 years or older
- Possess a valid driver's license
- Acquire a valid CDL permit or license by second term of current program
- Capable of strenuous physical activity
- Physically able to climb utility poles
- Comfortable with heights of up to 60 feet
- Achieve placement in RD-115, WR-095 and MTH-060 or provide proof of a comparable assessment
- Meet with EURM Department Advisor or Wilsonville Campus Director

*Continued*

Utility Trade Preparation: Lineworker continued...

### PROGRAM OUTCOMES

Successful completion of this program enables students to demonstrate the core knowledge and hands-on skills of electrical systems, equipment, and safety applications needed to satisfy employment requirements within the outside line construction industry. Accept personal responsibility with compliance to all laws and performance standards. Produce reliable results that blend safety and performance into a unified work practice. General knowledge and experience with: groundman work, pole climbing, utility tools of the trade, ropes and knots, trenching and shoring and rigging. Equipment includes: forklift, excavator, digger derrick, and bucket truck. Health and Safety Certification training includes: Flagging, CPR/First Aid, OSHA 10 and CDL permit. Students also have the opportunity to earn the National Career Readiness Certificate (NCRC),

### CAREERS

Career opportunities include: ground worker, general laborer, flagger, service technician, store room, maintenance and repair workers, power line clearance, maintenance and repair workers, general laborer or technical assistant. It also will prepare students to enter a utility industry apprenticeship. It is strongly recommended to meet with the department advisor.

For information contact: Angie Sandercock, EURM Department Advisor, 503-594-0944 or [angies@clackamas.edu](mailto:angies@clackamas.edu) or Shelly Tracy, Wilsonville Campus Director, 503-594-0945 or [shellyt@clackamas.edu](mailto:shellyt@clackamas.edu)

### UTILITY TRADE PREPARATION: LINEWORKER CERTIFICATE

FIRST TERM		CREDITS
ERM-100	Orientation to Energy & Resource Management	3
ERM-107	Career Portfolio	3
ERM-108A	Career Marketing Strategies	2
ERM-171	Energy Industry Workplace Health Awareness	3
ERM-172	Energy Industry Safety Development	3
HE-261	Community CPR	1
SECOND TERM		
ERM-101	Energy & Resource Technology I: Intro	3
ERM-102	Energy & Resource Technology II: Electricity	3
ERM-173	Energy Industry Performance Development	6
PSY-101	Human Relations	3
THIRD TERM		
ERM-174	Groundworker Training	3
ERM-175	Initial Pole Climbing	4
MFG-130	Basic Electricity I	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	MTH-065 Algebra II (or higher level math)	4
Credits required for certificate		47-48

## Fire Science (Wildland)

### Certificate

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

The Fire Science (Wildland) Certificate program outcomes should include a basic knowledge of fire behavior, survival and wildland firefighting skills for entry-level wildland firefighting positions, such as Firefighter 2.

### 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 Joe Crawford, 503-594-3620 or [jcrawford@clackamas.edu](mailto:jcrawford@clackamas.edu); Tom Laugle, 503-594-3066 or [toml@clackamas.edu](mailto:toml@clackamas.edu) or visit <http://depts.clackamas.edu/firescience/>

### 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)	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 53) (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 Basic Part I	5
EMT-102	EMT Basic Part II	5
EMT-107	EMT Rescue	3
FRP-131	Advanced Firefighter Training (S-131)	1
FRP-205	Forest Management Assessments & Inventories	3
FRP-217	Interagency Helicopter Training (S-271)	3
FRP-232	Dozer Boss (Single Resource) (S-232)	1
FRP-236	Tactical Decision Making in Wildland Fire (S-336)	2
FRP-239	Division/Group Supervisor (S-339)	2
FRP-247	Survivor V: Dangerous Animals	2
FRP-248	Survivor VI: Introduction to Search and Rescue	2
FRP-259	Task Force/Strike Team Leader (S-330)	2
FRP-260	Interagency Incident Management (S-260)	1
FRP-294	Intermediate Incident Command System (I-300)	2
FPR-295	Advanced ICS: ICS for Command and General Staff & Complex Incidents (I-400)	2
FPR-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

**Wilderness Survival and Leadership**

● *Career Pathway Certificate*

The Wilderness Survival and Leadership program is designed for those students who would like to pursue a variety of careers in the outdoors. Students will understand leadership, survival and rescue in the wilderness. The certificate is part of the Wildland Fire career pathway.

**PROGRAM OUTCOMES**

Upon successful completion of the program, students will learn the basics of land navigation, wilderness first aid, Northwest weather prediction, wilderness preparedness, approaches to dealing with dangerous animals, search and rescue methods including evacuation techniques, and preparation of helicopter landing zones.

**CAREERS**

This program prepares students for employment in parks and recreation, guide services, search and rescue, state and federal agencies, private organizations, forestry jobs and wildland firefighting. The certificate gives students the necessary skills to lead and/or participate in any programs in a wide variety of settings that require leadership and competency in the outback regions of the Northwest.

For information contact Tom Laugle, 503-594-3066 or tom1@clackamas.edu or visit <http://depts.clackamas.edu/fire-science/wilderness.aspx>

**WILDERNESS SURVIVAL AND LEADERSHIP CAREER PATHWAY CERTIFICATE**

COURSE		CREDITS
FRP-243	Survivor I: Maps, Compass, GPS	2
FRP-244	Survivor II: Wilderness	2
FRP-245	Survivor III: Weather of the NW	2
FRP-246	Survivor IV: Wilderness First Aid	2
FRP-247	Survivor V: Dangerous Animals	2
FRP-248	Survivor VI: Introduction to Search & Rescue	
or FRP-130	Introduction to Wildland Firefighting (S-130/S-190)	2-3

Credits required for certificate 12-13

Note: Courses do not need to be taken in sequence.

**Geographic Information Systems (GIS) Technology**

■ *Certificate*

The Geographic Information Systems (GIS) Technology Certificate offers instruction in the fields of geography, 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**

Program outcomes include technician skills necessary for entry into a broad range of positions with city, county and state agencies and engineering firms and utilities that utilize GIS.

**CAREERS**

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

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

**GEOGRAPHIC INFORMATION SYSTEMS (GIS) TECHNOLOGY CERTIFICATE**

FIRST TERM		CREDITS
GEO-100	Introduction to Physical Geography	
or GEO-110	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

*Continued*

*Geographic Information Systems (GIS) Technology continued...***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 53)	3

*Credits required for certificate* 48

**TECHNICAL ELECTIVES**

Any course with a GIS or CDT prefix.

## Gerontology

### Certificate

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 REQUIREMENTS**

Current CPR certificate is required.

**PROGRAM OUTCOMES**

This program provides the basic skills and knowledge necessary for many entry-level positions working with older people in health and social service settings, senior centers, and residential facilities for the elderly.

**CAREERS**

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

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

**GERONTOLOGY CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
GRN-181	Issues in Aging	3
HE-151	Body and Drugs I	
or HE-255	Body and Alcohol	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Gerontology program elective	3-4
— —	Human Relations requirement (see page 53)	
	(Recommended: PSY-101)	3-4

**WINTER TERM**

GRN-182	Aging & the Body	3
GRN-184	Aging & the Individual	3
HS-154	Community Resources	3
HS-156	Interviewing Theory and Techniques	3
— —	Gerontology program elective	3-4

**SPRING TERM**

GRN-183	Death & Dying	3
GRN-280	Gerontology/CWE	3
HS-170	Preparation for Field Experience in Human Services	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
— —	Gerontology program elective	3-4
<i>Credits required for certificate</i>		45-51

**GERONTOLOGY PROGRAM ELECTIVES**

<b>COURSE</b>	<b>CREDITS</b>	
COMM-140	Introduction to Intercultural Communication	4
CS-120	Survey of Computing	4
ED-258	Multicultural Education	3
FN-110	Personal Nutrition	3
HE-152	Body and Drugs II	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-260	Victim Advocacy and Assistance	4
HS-267	Intervention Strategies Working with Families	4
NUR-100	Nursing Assistant I	7
NUR-100C	Nursing Assistant I Lab	0
NUR-101	Certified Nursing Assistant 2	5
NUR-101C	Certified Nursing Assistant 2 Lab	0
PSY-219	Abnormal Psychology	4
PSY-221	Introduction to Counseling	4

Other electives may be approved by the Gerontology program advisor.



## Horticulture

### ■ Certificate

### ▲ Associate of Applied Science Degree

In keeping with the college mission, the Horticulture Department provides quality education and training for industry and community members. Course offerings in greenhouse, landscape, environmental education, and nursery management integrate technical knowledge, critical thinking, practical skills, and environmental stewardship.

Horticulture is a hands-on, broad-based curriculum where students participate in a laboratory-style practicum class which develops a full season's experience in growing and caring for plants. Students are involved in the day-to-day operation and maintenance of CCC's extensive greenhouse and landscape facilities, while training with tools of the trade: mowers, rototillers, tractors, pesticide applicators, greenhouse equipment and pruning tools. Students cultivate CCC's award-winning, All-American Selections Garden and landscape areas on the campus.

CCC's Horticulture and Landscape programs are the only programs accredited in Oregon by the Professional Land-care Network (PLANET). This accreditation provides students with enhanced opportunities to follow national PLANET landscaping standards.

Students may begin this program any term. Degree options include a one-year certificate program or a two-year associate's degree program. Following the course offerings in the order listed is encouraged unless otherwise advised by the horticulture advisor. The certificate and associate's degree programs include a cooperative work experience class which requires working with a horticultural employer.

#### PROGRAM OUTCOMES

Program outcomes includes the skills necessary for entry-level employment into tree, shrub, or perennial plant nurseries, greenhouse work, plant propagation, landscape design, landscape installation and maintenance, maintenance of interior plants, landscape supply and equipment sales.

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 Renee Harber, Horticulture advisor, 503-594-3294 or rharber@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-215	Herbaceous Perennials	3
HOR-226	Plant Identification/Fall	3
HOR-227	Plant Identification/Winter	3
HOR-228	Plant Identification/Spring	3

#### HORTICULTURE CERTIFICATE

FALL TERM		CREDITS
CS-091	Computers for New Users II	2
HOR-111	Horticulture Practicum/Fall	6
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/Winter	3
HOR-132	Pesticide Selection & Use	3
HOR-133	Horticulture Practicum/Winter	6
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-140	Soils & Fertilizers	3
HOR-142	Greenhouse Crops-Bedding Plants	
or HOR-145	Turf Installation & Maintenance	3
HOR-143	Horticulture Practicum/Spring	6
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
<i>Credits required for certificate</i>		58-62

#### HORTICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
CS-091	Computers for New Users II	2
HOR-111	Horticulture Practicum/Fall	6
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 of math)	3-5

Continued

*Horticulture continued...***WINTER TERM**

HOR-130	Plant Propagation Theory	
or HOR-131	Tree & Shrub Pruning/Winter	3
HOR-132	Pesticide Selection & Use	3
HOR-133	Horticulture Practicum/Winter	6
HOR-222	Horticultural Computer Applications	2
HOR-227	Plant Identification/Winter	3

**SPRING TERM**

HOR-140	Soils & Fertilizers	3
HOR-142	Greenhouse Crops-Bedding Plants	
or HOR-145	Turf Installation & Maintenance	3
HOR-143	Horticulture Practicum/Spring	6
HOR-228	Plant Identification/Spring	3

**SUMMER TERM**

HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE and HOR-282 Horticulture/CWE	6

**HORTICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE:  
2ND YEAR****FALL TERM**

		CREDITS
SPN-101	First Year Spanish	4
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3-4
— —	Horticulture program electives	6

**WINTER TERM**

BA-250	Small Business Management	3
HOR-230	Equipment Operation & Maintenance	3
— —	Horticulture program electives	6

**SPRING TERM**

BA-285	Human Relations in Business	
or COMM-100	Basic Speech Communication	3-4
HE-252	First Aid/CPR	3
— —	Horticulture program electives	6

*Credits required for degree*

92-96

**HORTICULTURE PROGRAM ELECTIVES**

COURSE		CREDITS
HOR-114	Garden Design	1
HOR-122	Greenhouse Crops—Potted Plants	3
HOR-123	Landscape Maintenance	3
HOR-124	Food Harvest	3
HOR-125	Food Production in the Willamette Valley	3
HOR-130	Plant Propagation Theory	3
HOR-131	Tree & Shrub Pruning/Winter	3
HOR-134	Herb Growing & Gardening	1
HOR-135	Propagation of Edible Plants	3
HOR-142	Greenhouse Crops—Bedding Plants	3
HOR-144	Basic Pruning	1
HOR-145	Turf Installation & Maintenance	3
HOR-146	Fruit & Berry Growing	3
HOR-147	Marketing Water Efficient Landscaping	1
HOR-148	Farm Equipment	3
HOR-211	Native Plant Identification	1
HOR-212	Flower Arranger's Garden/Fall	3
HOR-213	Computer-Aided Landscape Design	3
HOR-215	Herbaceous Perennial Plants	3
HOR-216	Integrated Pest Management	2
HOR-220	Plant Propagation/Fall	3
HOR-224	Landscape Installation	3
HOR-225	Principles of Arboriculture	3

HOR-229	Basic Landscape Design	3
HOR-231	Irrigation & Drainage Design	3
HOR-232	Commercial Floral Design	3
HOR-234	Intermediate Landscape Design	3
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
HOR-237	Disease Identification	2
HOR-239	Tree Climber Training	2
HOR-240	Irrigation & Drainage Practices	3
HOR-241	Nursery Management	3
HOR-242	Plant Propagation/Spring	3
HOR-244	Environmental Landscape Design	3
HOR-246	Organic Farming & Gardening	3
HOR-247	Hardscape Installation	3
HOR-248	Flower Arranger's Garden/Spring	3
HOR-250	Western Herbs	2
HOR-251	Herbal Products	1
HOR-252	Kitchen Herbs	1
HOR-280	Horticulture/CWE	3
HOR-281	Horticulture/CWE	6
HOR-282	Horticulture/CWE	3

## Irrigation Technician

### ● Career Pathway Certificate

The Irrigation Technician program provides instruction for design, installation, repair, upgrade, maintenance, monitoring and programming of irrigation systems for landscapes, nurseries, golf courses, parks or agriculture. This pathway certificate is a part of the Horticulture certificate and AAS degree programs.

**PROGRAM OUTCOMES**

Successful completion of this program should provide students with the necessary skills 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 Renee Harber, Horticulture advisor, 503-594-3294 or rharber@clackamas.edu

**IRRIGATION TECHNICIAN CAREER PATHWAY CERTIFICATE****WINTER TERM**

HOR-231	Irrigation/Drainage Design	3
HOR-281	Horticulture/CWE	
or HOR-280	Horticulture/CWE and HOR-282 Horticulture/CWE	6

**SPRING TERM**

HOR-140	Soils & Fertilizers	3
HOR-147	Marketing Water Efficient Landscaping	1
HOR-240	Irrigation/Drainage Practices	3

*Credits required for certificate*

16

## Plant Health Care

### ● Career Pathway Certificate

The Plant Health Care program provides instruction for monitoring and identifying pests, selecting and utilizing appropriate control measures and evaluating their effectiveness. Course work is offered through evening classes and on-the-job training. This pathway certificate is a part of the Horticulture Certificate and AAS programs.

#### PROGRAM OUTCOMES

Successful completion of this program should provide students with the skills necessary to work in the green industry as Plant Health Care Technician or Pest Control Specialist. The program also provides the knowledge to pass the Oregon State Department of Agriculture Pesticide Applicator licensing exams.

#### CAREERS

Career opportunities include working as a Plant Health Care Technician or Pest Control Specialist in nurseries, greenhouses, parks, golf courses, landscape management, or production agriculture.

For information contact Renee Harber, Horticulture advisor, 503-594-3294 or rharber@clackamas.edu

#### PLANT HEALTH CARE CAREER PATHWAY CERTIFICATE

FALL TERM		CREDITS
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
WINTER TERM		
HOR-132	Pesticide Selection & Use	3
HOR-216	Integrated Pest Management	2
HOR-237	Disease Identification	2
SPRING TERM		
HOR-281	Horticulture/CWE	6
or HOR-280	Horticulture/CWE and HOR-282 Horticulture/CWE	
<i>Credits required for certificate</i>		17



## Human Resource Management

### ■ Certificate

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

Successful completion of this program, along with experience and qualifications required by employers, include the skills necessary to be an employee, management trainee or manager in the human resource management field.

#### CAREERS

Career opportunities include human resource manager, human resource generalist, human resource specialist, human resource assistant, and information and records clerk.

For information contact Bill Waters, 503-594-3079 or billw@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	3-4
or MTH-065	Algebra II	
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
<i>Credits required for certificate</i>		53-54

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

## Human Resource Management Essentials

### ● Career Pathway Certificate

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

The HRM Essentials Career Pathway Certificate program prepares students to begin their careers in Human Resource Management and to continue their education in management. For students already employed in this field, the program will provide a foundation for career growth.

#### CAREERS

Careers includes human resource specialists, human resource generalists, and human resource assistants.

For more information contact Bill Waters, 503-594-3079 or billw@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
<i>Credits required for certificate</i>		16

## Human Services Generalist

### ■ Certificate

### ▲ Associate of Applied Science Degree

Both the one-year certificate and the two-year AAS in Human Services Generalist degree offer training for both 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. **Students must have a current CPR card at time of graduation.**

#### PROGRAM OUTCOMES

The Human Services Generalist certificate/degree provides training in skills such as interviewing clients, assessing assets and barriers to optimal client functioning, recognizing signs of substance abuse disorders, understanding of service organizations; and providing information and referrals to community resources.

#### 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 yvonnnes@clackamas.edu

#### HUMAN SERVICES GENERALIST CERTIFICATE

FALL TERM		CREDITS
HDF-260	Understanding Child Abuse & Neglect	3
HE-151	Body & Drugs I	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-152	Body & Drugs II	
or 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	3
HS-170	Introduction to Field Experiences in Human Services	3
HS-280	Human Services Generalist: CWE/Practicum	3
SOC-205	Social Stratification & Social Systems	4
— —	Human Services Generalist program electives	3
<i>Credits required for certificate</i>		46-48

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

FALL TERM		CREDITS
HDF-260	Understanding Child Abuse & Neglect	3
HE-151	Body & Drugs I	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-152	Body & Drugs II	
or 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	3
HS-170	Introduction to Field Experiences in Human Services	3
SOC-205	Social Stratification & Social Systems	4
— —	Human Services Generalist program electives	6

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

FALL TERM		CREDITS
HS-260	Victim Advocacy & Assistance	4
HS-280	Human Services Generalist: CWE/Practicum	4
PSY-215	Introduction to Developmental Psychology	4
— —	Human Services Generalist program electives	3



**WINTER TERM**

HS-156	Interviewing Theory & Techniques	3
HS-281	Human Services Generalist II: CWE/Practicum	4
PSY-221	Introduction to Counseling	4
— —	Human Services Generalist program electives	4

**SPRING TERM**

HS-216	Group Counseling Skills	3
HS-282	Human Services Generalist III: CWE/Practicum	4
PSY-219	Introduction to Abnormal Psychology	4
— —	Human Services Generalist program electives	3

Credits required for degree 90-92

**HUMAN SERVICES GENERALIST PROGRAM ELECTIVES**

Students take 25 credits from any of the following certificate programs, as electives in the Human Services Generalist program:

- Alcohol & Drug Counselor Career Pathway Certificate
- Business Management Certificate
- Career Development Facilitator Career Pathway Certificate
- Child Development Associate Career Pathway Certificate
- Early Childhood Education & Family Studies Certificate
- Emergency Medical Technology (EMT) Certificate
- Family Development Career Pathway Certificate
- Gerontology Certificate
- Juvenile Corrections Certificate
- Medical Assistant Certificate
- Paraeducator Certificate

## Alcohol & Drug Counselor

### ● Career Pathway Certificate

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.accho.com](http://www.accho.com)

**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 [yvonnnes@clackamas.edu](mailto:yvonnnes@clackamas.edu)

**ALCOHOL & DRUG COUNSELOR CAREER PATHWAY CERTIFICATE**

COURSE		CREDITS
HE-151	Body and Drugs I	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
<i>Credits required for certificate</i>		15

Note: Students may add HS-280 Human Services Generalist I/CWE for additional credits

## Career Development Facilitator

### ● Career Pathway Certificate

The Career Development Facilitator Career Pathway Certificate is designed for individuals who are working in the field of career development and/or career advancement. This certificate can also serve as a step toward earning a Global Career Development Facilitator Credential which is endorsed by the National Career Development Association.

**PROGRAM OUTCOMES**

Upon completion of the program, students are expected to possess the skills and knowledge to assist others in identifying and exploring career options, researching occupational information, making career decisions, implementing action plans, and conducting effective job searches.

**CAREERS**

Career development facilitator training can enhance the skills of many careers including human service providers, educators, training and development specialists, and human resource professionals. Career development facilitators may serve as school-to-work coordinators, work force development personnel, case managers, job search and career workshop facilitators, career coaches, intake interviewers, career resource specialists, and employment/placement specialists.

For information contact Student Life & Leadership, 503-594-3475, or <http://www.clackamas.edu/Advising/>

**CAREER DEVELOPMENT FACILITATOR CAREER PATHWAY CERTIFICATE**

FIRST TERM		CREDITS
HS-217	Helping Skills and Diverse Populations	2
HS-218	Career Development Models and Assessments	2
SECOND TERM		
HS-219	Training Clients/Peers and Employability Skills	2
HS-220	Labor Market Information and Technology in Career Planning	2

*Career Development Facilitator continued...*

### THIRD TERM

HS-221	Ethics and Consultation	2
HS-222	Program Management and Public Relations	2
— —	Career Development Facilitator program electives or general elective (any 100 level or above)	3-4

*Credits required for certificate* 15-16

### CAREER DEVELOPMENT FACILITATOR PROGRAM ELECTIVES

COURSE		CREDITS
HS-154	Community Resources	3
HS-260	Victim Advocacy & Assistance	4
HS-280	Human Services Generalist I/CWE	4

## Landscape

### ▲ Associate of Applied Science Degree

The Landscape certificate and degree programs are designed for students whose concentration is within the landscape career path. Students participate in a laboratory-style practicum class which develops a full season's experience in growing and caring for plants. Students are involved in the day-to-day operation and maintenance of CCC's extensive greenhouse and landscape facilities, arboretum and turf management areas, including training with tools of the trade: mowers, rototillers, tractors, pesticide applicators, greenhouse equipment and pruning tools. Students also cultivate CCC's award-winning, All-American Selections Garden and landscape areas on the CCC campus.

CCC's Landscape and Horticulture programs are the only programs accredited in Oregon by the Professional Land-care Network (PLANET). This accreditation provides students with enhanced opportunities to follow national PLANET landscaping standards, to network with landscape industry professionals, to extend their knowledge about landscape standards and practices and to attend the National PLANET Student Career Days each year.

Students may begin this program any term. Following the course offerings in the order listed is encouraged unless otherwise advised by the Horticulture advisor. The program includes a cooperative work experience class and working with a horticultural employer.

### PROGRAM OUTCOMES

Program outcomes should include the skills necessary for entry-level employment in landscape design, landscape installation, maintenance of landscapes, tree care industry and supply/equipment sales.

Students completing the Landscape 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 equipment sales, landscape design, installation and maintenance contractor, arborist, turf management, estate gardening, parks department personnel and groundskeepers.

For information contact Renee Harber, Horticulture advisor, 503-594-3294 or rharber@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 ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
HOR-111	Horticulture Practicum/Fall	6
HOR-224	Landscape Installation	3
HOR-226	Plant Identification/Fall	3
MTH-050	Technical Mathematics I	
	or MTH-065 Algebra II (or higher level of math)	3-5
WR-101	Communication Skills: Occupational Writing	
	or WR-121 English Composition	3-4

### WINTER TERM

HOR-131	Tree & Shrub Pruning/Winter	3
HOR-132	Pesticide Selection & Use	3
HOR-133	Horticulture Practicum/Winter	6
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-140	Soils & Fertilizers	3
HOR-143	Horticulture Practicum/Spring	6
HOR-145	Turf Installation & Maintenance	3
HOR-228	Plant Identification/Spring	3

### SUMMER TERM

HOR-239	Tree Climber Training	2
HOR-281	Horticulture/CWE	
	or HOR-280 Horticulture/CWE and HOR-282 Horticulture/CWE	6

### LANDSCAPE ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
HOR-123	Landscape Maintenance	
	or HOR-225 Principles of Arboriculture	3
HOR-229	Basic Landscape Design	3
HOR-235	Weed Identification	
	or HOR-236 Insect Identification	2
SPN-101	First Year Spanish	4
WINTER TERM		CREDITS
BA-250	Small Business Management	3
HOR-230	Equipment Operation & Maintenance	3
HOR-231	Irrigation & Drainage Design	3
HOR-234	Intermediate Landscape Design	3
HOR-237	Disease Identification	2

**SPRING TERM**

HE-252	First Aid/CPR	3
HOR-147	Marketing Water Efficient Landscaping	1
HOR-213	Computer-Aided Landscape Design	
	or HOR-244 Environmental Landscape Design	3
HOR-240	Irrigation & Drainage Practices	3
HOR-247	Hardscape Installation	3
<i>Credits required for degree</i>		98-104

## Landscape Practices

### ■ Certificate

The Landscape Practices certificate is designed for students whose concentration is within the landscape career path. Students participate in a laboratory-style practicum class which develops a full season's experience in growing and caring for plants. Students are involved in the day-to-day operation and maintenance of CCC's extensive greenhouse and landscape facilities, arboretum and turf management areas, including training with tools of the trade: mowers, rototillers, tractors, pesticide applicators, greenhouse equipment and pruning tools. Students also cultivate CCC's award winning, All-American Selections Garden and landscape areas on the CCC campus.

CCC's Landscape and Horticulture programs are the only programs accredited in Oregon by the Professional Land-care Network (PLANET). This accreditation provides students with enhanced opportunities to follow national PLANET landscape industry professionals, to extend their knowledge about landscape standards and practices and to attend the National PLANET Student Career Days each year.

Students may begin this program any term. Following the course offerings in the order listed is encouraged unless otherwise advised by the Horticulture advisor. The program includes a cooperative work experience class and working with a horticultural employer.

**PROGRAM OUTCOMES**

Program outcomes should include the skills necessary for entry-level employment in landscape design, landscape installation, maintenance of landscapes, tree care industry and supply/equipment sales.

**CAREERS**

Career opportunities include equipment sales, landscape design, installation and maintenance contractor, arborist, turf management, estate gardening, parks department personnel and groundskeepers.

For information contact Renee Harber, Horticulture advisor, 503-594-3294 or rharber@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**

<b>FALL TERM</b>		<b>CREDITS</b>
HOR-224	Landscape Installation	3
HOR-225	Principles of Arboriculture	
	or HOR-226 Plant Identification/Fall	3
HOR-229	Basic Landscape Design	
	or HOR-123 Landscape Maintenance	3
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
<b>WINTER TERM</b>		
BA-250	Small Business Management	3
HOR-132	Pesticide Selection & Use	3
HOR-231	Irrigation & Drainage Design	3
HOR-234	Intermediate Landscape Design	
	or HOR-230 Equipment Operation & Maintenance	3
HOR-227	Plant Identification/Winter	
	or HOR-239* Tree Climber Training	2-3
<b>SPRING TERM</b>		
HOR-140	Soils & Fertilizers	3
HOR-145	Turf Installation & Maintenance	3
HOR-247	Hardscape Installation	3
HOR-228	Plant Identification/Spring	3
HOR-280	Horticulture/CWE	3
<i>Credits required for certificate</i>		42-43

\* Note: This course is only offered Summer term.

## Manufacturing Technology

### \* Professional Upgrade

#### ■ Certificate

#### ▲ Associate of Applied Science Degree

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

*Continued*

*Manufacturing Technology continued...*

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**

Program outcomes include the skills necessary for entry-level technician and operator positions in manufacturing technology trades. Program outcomes also include the skills necessary for employment as apprentice machinist, leading to careers in tool and die making, maintenance machining, mold and model making.

**CAREERS**

Career opportunities may include machine tool operator, CNC programmer/operator and CAD/CAM technicians.

**CNC MACHINING TECHNICIAN**

See Career Pathway Certificate program on page 101.

**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 Mike Mattson, Department Chair, 503-594-3322 or mattsonm@clackamas.edu; or 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.

**CAD/CAM TECHNOLOGY DEGREE**

See AAS degree program on page 68.

**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-113**	Machine Tool Fundamentals III	6
MFG-280	Manufacturing Technology/CWE	2
WR-101*	Communication Skills: Occupational Writing	3
— —	Human Relations requirement (see page 53)	3
<i>Credits required for certificate</i>		51

**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-201	CNC I: Setup & Operation	4
MFG-204	Computer-Aided Manufacturing I	4
MFG-211	Machine Tool Fundamentals IV	6
— —	Manufacturing Technology program electives	3
FIFTH TERM		
MFG-202	CNC II: Programming & Operation	4
MFG-205	Computer-Aided Manufacturing II	4
— —	Manufacturing Technology program electives	3
— —	PE/Health requirement (see page 53)	3
SIXTH TERM		
MFG-203	CNC III: Applied Programming & Operation	3
MFG-206	Computer-Aided Manufacturing III	3
MFG-221	Materials Science	3
MFG-280	Manufacturing Technology/CWE	2
— —*	General elective (any course 100 level or above)	3
<i>Credits required for degree</i>		96

**MANUFACTURING TECHNOLOGY PROGRAM ELECTIVES**

Complete three or more credits from the following:

COURSE	CREDITS	
CDT-102	Sketching & Problem Solving	1-3
CDT-103	Computer-Aided Drafting I	4
CDT-108A	Introduction to Solid Modeling	3
CDT-223	Inventor Fundamentals	3
CDT-225	Advanced SolidWorks	1-3
MET-170	Introduction to Manufacturing Process	3
MFG-113	Machine Tool Fundamentals III	3
MFG-130	Basic Electricity I	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.

\*\*Students seeking to earn the associate's degree must take nine credits of MFG-113.

## CNC Machining Technician

### ● Career Pathway Certificate

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 the program, students will have learned the skills necessary to obtain entry-level employment in the manufacturing field as a CNC operator.

#### 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 Fundamental I	9
MFG-201	CNC I: Set-up & Operation	4
MTH-050	Technical Mathematics I	3
— —	CNC Machining Technician program elective	2-4
<i>Credits required for certificate</i>		23-25

#### CNC MACHINING TECHNICIAN PROGRAM ELECTIVES

COURSE		CREDITS
MFG-101	Essential Skills for Manufacturing I	2-4
MFG-105	Dimensional Inspection	2
MFG-106	Applied Geometric Dimensioning & Tolerancing for Manufacturing	2
MFG-112	Machine Tool Fundamental II	3
MFG-202	CNC II: Programming & Operation	4
MFG-204	Computer-Aided Manufacturing I	4
WLD-150	Welding Processes	4

## Marketing & Management

### ▲ Associate of Applied Science Degree

This degree focuses on developing marketing skills along with providing leadership and entrepreneurship training. This program is designed to enhance skills and employability for students that desire a career path in marketing and management as well as those who choose the entrepreneurial path.

#### PROGRAM OUTCOMES

Upon successful completion of this program, students will 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. Students will prepare effective presentations, develop an effective marketing plan, prepare winning sales presentations and prepare themselves for upward mobility in the marketing and management fields.

#### CAREERS

Career opportunities include supervisors or manager of retail sales workers, sales associate, marketing manager, call center supervisor and account manager.

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

#### MARKETING & MANAGEMENT

##### ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BA-224	Human Resource Management	4
WR-121	English Composition	4
WINTER TERM		
BA-131	Introduction to Business Computing	4
BA-156	Business Forecasting	3
BA-223	Principles of Marketing	4
BA-285	Human Relations in Business	4
SPRING TERM		
BA-205	Solving Communication Problems with Technology	4
BA-211	Financial Accounting I	4
BA-226	Business Law I	4
BA-238	Sales	4

#### MARKETING & MANAGEMENT

##### ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-206	Management Fundamentals	4
BA-212	Financial Accounting II	4
BA-239	Advertising	4
BA-249	Retailing	3
— —	PE/Health requirement (see page 53)	1

*Marketing & Management continued...***WINTER TERM**

BA-213	Decision Making with Accounting Information	4
BA-222	Financial Management	3
BA-227	Business Law II	4
BA-218	Personal Finance	3
EC-201	Principles of Economics: MICRO	4

**SPRING TERM**

BA-217	Budgeting for Managers	3
BA-225	Business Report Writing	
or WR-227	Technical Report Writing	3-4
BA-261	Consumer Behavior	4
BA-280	Business/CWE	3
— —	Marketing & Management program elective	3

*Credits required for degree* 96-97

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

**MARKETING & MANAGEMENT PROGRAM ELECTIVES**

Any Business Administration (BA) or Business Technology (BT) course not included in the Marketing & Management program.

## Marketing

**■ Certificate**

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**

Students who successfully complete this certificate will be qualified for entry-level marketing positions in areas such as retail and wholesale sales, market research, advertising and distribution. Skills developed in this certificate program should enhance the worker's employability and advancement potential in both technological and hard skills as well as the soft skills required for designing and implementing marketing programs in the workplace.

**CAREERS**

Career opportunities include wholesale and manufacturing sales representative, insurance and financial sales agents and marketing and advertising assistants.

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-224	Human Resource Management	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	Solving Communication Problems with Technology	4
BA-211	Financial Accounting I	4
BA-226	Business Law I	4
BA-238	Sales	4
BA-280	Business/CWE	3

*Credits required for certificate* 49

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

## Medical Assistant

**■ Certificate**

Medical assistants function as integral members of the healthcare delivery team in performing administrative, clinical and transdisciplinary (general) functions. The Medical Assistant (MA) program is accredited by Accreditation of Allied Health Education Programs (CAAHEP), 35 East Wacker Drive, Suite 1970, Chicago, IL 60601-2208; on recommendation of the Medical Assistant Educational Review Board, of the Review Board of the American Association of Medical Assistants' Endowment (AAMAE).

**PROGRAM PREREQUISITES & REQUIREMENTS**

The MA applications with admission procedures, requirements, prerequisites and pertinent dates are available online.

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 2003 *or* previous college coursework as documented by official college/university transcripts. To be eligible to apply, students must show placement by
  - passing MTH-020 or placement in MTH-050/060.
- Have successfully completed MA-110 and WR-101 or WR-121, and COMM-100 or COMM-111 or COMM-218. Curriculum prerequisites are subject to change year by year. In order to assure potential students have the most current information, please review the department website.
- 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 required immunizations or proof of immunity,

- Healthcare Provider CPR (American Heart Association) card and a Basic First Aid card; both of which must be current throughout the entirety of the MA program,
- complete a criminal history background check and urine drug screen (UDS) as instructed by the Health Sciences Department. NOTE: Successful students will be asked to repeat the criminal history and UDS prior to entering clinical placement.

**PROGRAM OUTCOMES**

Our goal is to prepare entry-level medical assistants in the cognitive (knowledge), psychomotor (skills) and affective (behavior) learning domains. Upon successful completion of the MA program, students should be eligible to sit for the American Association of Medical Assistants national certification exam, CMA, or the American Medical Technologist national certification exam, RMA. Students should be prepared for entry-level employment as a medical assistant.

**CAREERS**

Career opportunities may include but are not limited to: employment in the ambulatory care setting, and phlebotomy.

For continuing education opportunities for healthcare providers see Healthcare Professional Development (HPD) in the course description section on page 178.

For more information, contact [health-sciences-questions@clackamas.edu](mailto:health-sciences-questions@clackamas.edu)

*The Medical Assistant Program of Clackamas Community College does not discriminate among applicants as to age, sex, race, religion, or national origin.*

**MEDICAL ASSISTANT CERTIFICATE PREREQUISITE TO APPLICATION**

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 for the 2013-2014 cohort year, please review the department website.

COURSE	CREDITS
MA-110 Medical Terminology	3
WR-101 Communication Skills: Occupational Writing or WR-121 English Composition	3-4
<b>ANY ONE OF THE FOLLOWING:</b>	
COMM-100 Basic Speech Communication	3
COMM-111 Public Speaking	4
COMM-218 Interpersonal Communication	4

**MEDICAL ASSISTANT CERTIFICATE**

FALL TERM	CREDITS
BI-120* Introduction to Human Anatomy & Physiology or BI-102 General Biology	4
CS-120 Survey of Computing	4
MA-112 Medical Office Practice	4
MA-145 Insurance & Health Information Management	3
PSY-101 Human Relations	3

**SECOND TERM**

MA-116 Introduction to Medications	3
MA-117 Clinical Lab Procedures I	2
MA-118 Examination Room Techniques	4
MTH-054 Math for Health Care Professionals	4

**THIRD TERM (WEEKS 1-5)**

MA-115 Phlebotomy for Medical Assistants	1
MA-121 Clinical Lab Procedures II	2
PSY-215 Introduction to Developmental Psychology	4

**(WEEKS 6-11)**

MA-119** Medical Assistant Practicum	9
<i>Credits required for certificate</i> 56-58	

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

Note: All clinical/practicum courses are Pass/No Pass. All other courses are letter grades and must be passed with C or better.

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

\*\*MA students are required to participate in an unpaid, supervised externship in an ambulatory care setting. Individuals who have been found guilty of a felony or pleaded guilty to a felony, may not be eligible for clinical practicum placement or eligible to take the national certification exam.

- For the Certified Medical Assistant (CMA) exam, direct inquiries to: AAMA Certification Department at [certification@aama-ntl.org](mailto:certification@aama-ntl.org) or by phone 608-228-2262.
- For the Registered Medical Assistant (RMA) exam, direct inquiries to [www.americanmedtech.org](http://www.americanmedtech.org) or by phone 800-275-1268.

**Microelectronics Systems Technology**

*\* Professional Upgrade*

■ *Certificate*

▲ *Associate of Applied Science Degree*

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**

Program outcomes include the skills necessary for entry-level employment into the microelectronics and semiconductor industries as technicians, operators and processors.

*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
<b>SECOND TERM</b>		
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
<b>THIRD TERM</b>		
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 elective	3
— —	Human Relations requirement (see page 53)	3
<i>Credits required for certificate</i>		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
<b>FIFTH TERM</b>		
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
— —	PE/Health requirement (see page 53)	3
— —	Microelectronics Systems Technology program electives	3
<i>Credits required for degree</i>		99

### MICROELECTRONICS SYSTEMS TECHNOLOGY PROGRAM ELECTIVES:

Any course with an EET, RET, SM, MFG, WLD or CDT 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 Technology

### ■ Certificate

The Music Technology certificate gives students the core skills needed to enter the sound and music production industry.

### PROGRAM OUTCOMES

Program outcomes should include the skills necessary for entry-level employment into a variety of music and sound careers.

### 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 information contact Brian Rose, 503-594-3340 or [brianr@clackamas.edu](mailto:brianr@clackamas.edu)



**MUSIC TECHNOLOGY CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
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
<b>WINTER TERM</b>		
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
<b>SPRING TERM</b>		
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
<i>Credits required for certificate</i>		50-60

**MUSIC TECHNOLOGY PROGRAM BASICS**

Complete nine credits from the following:

<b>COURSE</b>	<b>CREDITS</b>	
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:

<b>COURSE</b>	<b>CREDITS</b>	
MUP-100	Individual Lessons: Non-Music Majors	1
MUP-102	Concert Band	2
MUP-104	Pep Band/Combo-Improv	1
MUP-105	Jazz Ensemble	3
MUP-121	Clackamas Chorale	1
MUP-122	Chamber Choir	3
MUP-125	Voice Jazz Ensemble: Mainstream	3
MUP-141	College Orchestra	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-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-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

**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 Long Term Care 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).

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.

*Continued*

*Nursing continued...*

### 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. For more information, email [Health-Sciences-Questions@clackamas.edu](mailto:Health-Sciences-Questions@clackamas.edu)

### 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
NUR-101C	Certified Nursing Assistant 2 Clinical	0 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](mailto:Health-Sciences-Questions@clackamas.edu)

### NURSING PROGRAM

Clackamas Community College is a full 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](http://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. 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. Drug use and/or conviction of a felony may result in the Oregon State Board of Nursing denying licensure upon graduation.

### PROGRAM OUTCOMES

The OCNE curriculum addresses the need for nurses to be skilled in clinical judgment and critical thinking, evidence-based practice, relationship-centered care, interdisciplinary collaboration, and assisting individuals and families across the life span regarding self-care practices in areas of health promotion, acute and chronic illness as well as end of life issues.

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 taken 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, 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 178.

### NURSING APPLICATION REQUIREMENTS

Information regarding the program, the application process and pre-nursing academic advising sessions is available at <http://depts.clackamas.edu/healthsciences/nur.asp>

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.**

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 writing requirement: WR-121, WR-122 and WR-123 at 3 credits each, or WR-121 and 122 at 4 credits each.
- 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	4-5
or	Biology with genetics	
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.

\*\* BI-234 must be completed prior to start of second term of nursing program.

\*\*\* 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	2
NRS-111C	Foundations of Nursing in Chronic Illness I Clinical	4
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	4-5
or	Biology with Genetics	

\*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

**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	3-4
or WR-227	Technical Report Writing	
— —	Humanities, Social Science or Natural Science electives, if needed	4

Credits required for degree 90-93

\*Completion of a previous bachelor's degree at a regionally accredited college or university is considered equivalent to completion of the writing series. Remedial English such as sentence structure and punctuation will not be accepted as sufficient to meet the prerequisite. Each college/university may set its own policy as to whether there is an 8 credit minimum for writing.

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.

Nursing continued...

### 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-288

### 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

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 consulta-  
tion with the student, work-site trainer, CCC faculty and  
program coordinator.

### PROGRAM OUTCOMES

Individualized training curriculum and employment plan,  
which describe the skills and knowledge necessary for the  
student to become competitively employable.

Contact with employers beyond what would ordinarily be  
available through an application process.

Increased 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 occu-  
pations, depending on the goals, skills and aptitude of the  
student and the availability of local training sites.

For information please contact Student Academic Support  
Services Department, 503-594-3475, or <http://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 53)	3

*Credits required for certificate* 48

## Paraeducator

### ■ Certificate

The Paraeducator Certificate is designed for those who would like to work as instructional assistants in educational settings. The certificate prepares students to resolve everyday challenges and to professionally support teachers in planning, presenting and evaluating instruction and learning. The paraeducator's responsibilities include assisting small-group instruction in reading, math, spelling, assisting individual students in the above academic areas and self-help skills, daily-living skills, following behavior programs as directed by the teacher, and preparing and assembling materials. The particular responsibilities assigned to a paraeducator (instructional assistant) depend on the program and personnel in each school. Employment opportunities exist in surrounding areas as a result of the present legislative support for equal education for students with special needs. The program is designed for persons of all ages, races, cultures and economic backgrounds. The program values and encourages diversity in the field of education.

Course work provides a basic foundation in theory and practical application in how children learn, teaching strategies, developing positive relationships with students, integrating current 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 Related Instruction requirements, 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

Completion of the Paraeducator Certificate provides more than half the necessary credits for the associate's degree as well as a strong foundation in education and teaching. Completion of the remaining degree requirements includes the knowledge and skills necessary to work as a teacher assistant in a variety of public and private elementary and secondary school settings.

#### 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 a staff member in Student Life & Leadership, or Paula Hamm at 503-594-3210 for requirements.

### CAREERS

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

For information contact Yvonne Smith, 503-594-3207 or [yvonnesc@clackamas.edu](mailto:yvonnesc@clackamas.edu)

#### PARAEDUCATOR CERTIFICATE

FALL TERM		CREDITS
CS-121	Computer Applications	
or BA-131	Introduction to Business Computing	3-4
ED-100	Introduction to Education	3
ED-113	Instructional Strategies in Reading & Language Arts	3
ED-131	Instructional Strategies	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-280	Practicum/CWE	3-6
SPRING TERM		
ED-114	Instructional Strategies in Math and Science	3
ED-130	Comprehensive Classroom Management	3
ED-254	Instructional Strategies for English Language Learners	3
ED-258	Multicultural Education	3
SUMMER TERM		
ED-235	Educational Technology	3
MTH-065	Algebra II	4
RD-090	Intermediate Reading Skills*	3
WR-121	English Composition	4
<i>Credits required for certificate</i>		50-54

\*The reading requirement may be challenged in the testing center.

## Professional Truck Driver

### ■ Certificate

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 the program, students will have learned the necessary skills to take the CDL exam and be qualified for employment in the Transportation and Logistics industry.

*Continued*

*Professional Truck Driver continued...*

### CAREERS

Career opportunities include short and long haul trucking, delivery services, public transportation, supply and logistics management, and dispatching.

For information contact Applied Technology at 503-594-3064 or Paul Wanner at paulw@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
<i>Credits required for certificate</i>		17-19

## Project Management

### ▲ Associate of Applied Science Degree

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

Students successfully completing this program will be able to demonstrate the skills necessary for employment in a variety of business and management settings, including utilities, manufacturing, merchandising, retail, sales, construction, consulting, government and non-profit organizations. More advanced program outcome skills include project and business design, budgeting and scheduling, team management, project management, and project evaluation.

### 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 information contact Kathy Christensen, 503-594-3072 or kathc@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 requirement (see page 53)	1

#### WINTER TERM

BA-111	General Accounting	
or BA-211	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	Solving Communication Problems 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	4
COMM-111	Public Speaking	4
— —	Any BA/BT course not already used in Project Management Program	3

#### SPRING TERM

BA-225	Business Report Writing	
or WR-227	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

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

Program outcomes include the skills necessary to gain entry-level employment in a variety of business and management settings including utilities, manufacturing, merchandising, retail sales, construction, consulting, government and non-profit organizations. This program prepares the student to continue working toward an AAS degree in project management or another closely related AAS degree.

#### 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 information contact Kathy Christensen, 503-594-3072 or [kathc@clackamas.edu](mailto:kathc@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

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.

For information contact Kathy Christensen, 503-594-3072 or [kathc@clackamas.edu](mailto:kathc@clackamas.edu)

#### PROJECT MANAGEMENT LEADERSHIP & COMMUNICATION CAREER PATHWAY CERTIFICATE

COURSE		CREDITS
BA-122	Teamwork	3
BA-123	Leadership & Motivation	3
BA-124	Negotiation	3
BA-205	Solving Communication Problems 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

This program is designed for students with prior project management experience and good interpersonal skills who want to develop their technical competencies in project management. It provides a foundation in fundamental project processes such as initiation, planning, execution, monitoring and control, and closing. The program also focuses on management techniques, such as project management. The software programs, Microsoft Project and Excel, are employed for project estimating, scheduling, tracking, and analysis. This program provides the tools and techniques required for successful project management.

For information contact Kathy Christensen, 503-594-3072 or [kathc@clackamas.edu](mailto:kathc@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 Degree

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 repair equipment 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

Program outcomes include providing graduates with the technician-level skills necessary for entry into a broad range of positions related to the manufacture, maintenance and integration of renewable energy technologies. Graduates will have a scientific base on which to understand the operating principles of energy technologies and have the analytical skills necessary to make economic, systems design and procurement decisions.

#### 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 Mike Mattson at 503-594-3322 or mattsonm@clackamas.edu

#### 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: Motors & Controls	3
MTH-080	Technical Mathematics II	3
RET-209	Renewable Energy I: Energy Efficiency	3

#### THIRD TERM

MET-170	Manufacturing Processes	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 53)	3
— —	Renewable Energy Technology program elective	3
<i>Credits required for certificate</i>		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
HUM-180	Pathway to Sustainability	
	or HUM-181 Pathway to Sustainability	
	or HUM-182 Pathway to Sustainability	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
— —	PE/Health requirement (see page 53)	3
— —	Renewable Energy Technology program elective	3
<i>Credits required for degree</i>		97

#### RENEWABLE ENERGY TECHNOLOGY PROGRAM ELECTIVES

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





## Energy Systems Maintenance Technician

### ● Career Pathway Certificate

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 the program, students will be prepared for entry level employment in the fields of manufacturing, installation, and maintenance of renewable energy production. Successful students will be knowledgeable in electrical circuitry, prototype development and testing, systems analysis and testing, systems maintenance, instrument calibration, and report preparation.

#### 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.

#### 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
<i>Credits required for certificate</i>		23-25

#### ENERGY SYSTEMS MAINTENANCE TECHNICIAN PROGRAM ELECTIVES

Select 6-8 Elective credits from the following:

COURSE		CREDITS
MET-170	Manufacturing Processes	3
MFG-111	Machine Tool Fundamentals I	6
RET-209	Renewable Energy I: Energy Efficiency	3
WLD-150	Welding Processes	4
— —	or WLD-102 Introduction to Welding	2

## Retail Management

### ▲ Associate of Applied Science Degree

This degree is sponsored by members of the retail industry and is recommended for students currently working in retail supervisory and middle management, as well as traditional students who desire 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 successfully completing this degree, students should be able to demonstrate the skills necessary to work as retail sales supervisors and managers, and to advance to higher levels of responsibility including corporate advancement opportunities. Successful students will develop hard and soft skills in technology and communication to be effective team leaders and motivators. Students will experience a variety of roles in the retail industry and will pursue a career pathway that leads to increasing challenge, responsibility and opportunities.

#### CAREERS

Career opportunities include retail store managers, team managers, supervisors, corporate interns and trainees, and similar positions in all types of retail establishments.

For information contact Joan Ryan, 503-594-3077 or joanr@clackamas.edu

#### RETAIL MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-104*	Business Math****	3
BA-131	Introduction to Business Computing	4
BA-285*	Human Relations in Business	4
WR-101*	Communication Skills: Occupational Writing	
— —	or WR-121 English Composition**	3-4
— —	Any BA/BT/HD course not already in the Retail Management program	1

#### WINTER TERM

BA-111	General Accounting I	
— —	or BA-211 Financial Accounting I**	4
BA-206	Management Fundamentals	4
BA-214	Business Communication	
— —	or BA-205 Solving Communication Problems with Technology	3-4
BA-223	Principles of Marketing	4

#### SPRING TERM

BA-217	Budgeting for Managers	3
BA-224	Human Resource Management	4
COMM-111	Public Speaking	4
— —	Any BA/BT/HD course not already in the Retail Management program	4

Retail Management continued...

**RETAIL MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE:  
2ND YEAR**

FALL TERM		CREDITS
BA-249	Retailing	3
BA-251	Supervisory Management	3
COMM-140	Intercultural Communication**	4
HE-261*	Community CPR	1
— —	Any BA/BT/HD course not already in the Retail Management program	3
WINTER TERM		
BA-112	General Accounting II	
or BA-212	Financial Accounting II**	4
BA-226	Business Law 1**	4
COMM-105	Listening**	4
EC-200	Introduction to Economics	4
or EC-201	Principles of Economics: MICRO**	
with EC-202	Principles of Economics: MACRO (8)**	
SPRING TERM		
BA-124	Negotiation	3
BA-238	Sales	4
BA-261	Consumer Behavior	4
BA-280	Business/CWE	3
— —	Any BA/BT/HD course not already in the Retail Management program	1
<i>Credits required for degree</i>		90-92

\*Meets general education requirements (computation, communication, human relations, PE/Health)

\*\* For transferring to the 3+1 program at Marylhurst University, these classes are required. (They cannot be waived or substituted.)

\*\*\*Will accept WR-123 or WR-222 if the student is transferring in credits or if the credits were taken prior to entering the program.

\*\*\*\*For this degree, BA-104 meets the Related Instruction Computation requirement. For transferring to Marylhurst for the articulated bachelor's degree, MTH-111 meets the computation requirement.

**MARYLHURST UNIVERSITY TRANSFER AGREEMENT**

Marylhurst University will accept the CCC Retail Management Associate of Applied Science Degree plus a third year module of courses at Clackamas that will transfer as the first three years of a bachelor's degree. Marylhurst will accept the following Clackamas courses as their third year:

**THIRD YEAR ARTICULATION TO MARYLHURST UNIVERSITY**

FALL TERM		CREDITS
BI-101	General Biology**	4
MTH-111	College Algebra	5
WINTER TERM		
BI-102	General Biology**	4
MTH-243	Statistics I**	4
WR-122	English Composition**	4
SPRING TERM		
WR-227	Technical Report Writing***	4
— —	Science elective*	4

\* Contact the Lead Retail Management instructor or the Marylhurst advisor (hcarpenter@marylhurst.edu) for the current list of approved science electives.

## Retail Management

### ■ Certificate

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 certificate, students will be able to demonstrate skills necessary to successfully work as retail sales associates and to advance to higher levels of responsibility including supervisory management. Students develop hard and soft skills in technology and communication to be effective support personnel as well as team leaders and motivators.

#### CAREERS

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

For information contact Joan Ryan, 503-594-3077 or joanr@clackamas.edu

#### RETAIL MANAGEMENT CERTIFICATE

##### FALL TERM

BA-104*	Business Math	3
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-111	General Accounting I	4
BA-205	Solving Communication Problems with Technology	4
BA-206	Management Fundamentals	4
BA-223	Principles of Marketing	4

##### SPRING TERM

BA-224	Human Resource Management	4
BA-249	Retailing	3
BA-285	Human Relations in Business	4
— —	Any BA/BT course not already included in the Retail Management program	4

*Credits required for certificate* 45-46

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

## Western Association of Food Chains (WAFC) Retail Management

### \* Professional Upgrade

#### ■ Certificate

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 certificate, students will be able to demonstrate skills necessary to successfully work as retail sales associates and to advance to higher levels of responsibility including supervisory management. Students should develop hard and soft skills in technology and communication to be effective support personnel as well as team leaders and motivators.

#### CAREERS

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

For information contact Joan Ryan, 503-594-3077 or joanr@clackamas.edu

#### WESTERN ASSOCIATION OF FOOD CHAINS (WAFC) RETAIL MANAGEMENT CERTIFICATE

COURSE		CREDITS
BA-104	Business Math	3
BA-111	General Accounting I	4
BA-131	Introduction to Business Computing	4
BA-205	Solving Communication Problems with Technology	4
BA-206	Management Fundamentals	4
BA-223	Principles of Marketing	4
BA-224	Human Resource Management	4
BA-249	Retailing	3
BA-285	Human Relations in Business	4
COMM-111	Public Speaking	4
<i>Credits required for certificate</i>		38

Note: This certificate is designed to be completed in less than one year.

## Urban Agriculture

#### ■ Certificate

This certificate focuses on an ecological systems approach to sustainable farming principles and practices suitable for local food crop production through intensive classroom and on-farm experience. Many classes have a lab component which allows students to have the opportunity to learn organic systems, and production methods for vegetable, grain, and fruit crops. Students may begin this program Fall, Winter, or Spring term.

#### PROGRAM OUTCOMES

Successful completion of this program should provide students with a deeper knowledge of organic agricultural production and possess the ability to apply this knowledge and perspective in farm management with skills around small, diverse, organic farm principles and practices through classroom and practical training. Students should also be able to evaluate the needs and priorities of the work that needs to be done to successfully produce a variety of edible crops.

#### CAREERS

The Urban Agriculture certificate prepares graduates to operate their own farm or community food system endeavor. Graduates will be qualified to run small-scale farms, work closely with existing farmers, and be advocates of local food systems, utilizing firsthand experience to become new farmers in the principles and techniques needed to be successful producers of specialty crops incorporating local organic production methods. Other career opportunities include working and managing small farms, community gardens, farmers markets, and school gardens.

For information contact Renee Harber, Horticulture advisor, 503-594-3294 or rharber@clackamas.edu

#### URBAN AGRICULTURE CERTIFICATE

FALL TERM		CREDITS
HOR-124	Food Harvest	3
HOR-125	Food Production in the Willamette Valley	3
HOR-235	Weed Identification	2
HOR-250	Western Herbs	2
MTH-050	Technical Mathematics I	
	or MTH-065 Algebra II (or higher level math)	3-5
WR-101	Communication Skills: Occupational Writing	
	or WR-121 English Composition	3-4

#### WINTER TERM

BA-250	Small Business Management	3
HOR-132	Pesticide Selection & Use	
	or HOR-231 Irrigation/Drainage Design	3
HOR-135	Propagation of Edible Plants	3
HOR-136	Urban Agriculture Practicum/Winter	6
HOR-216	Integrated Pest Management	2

Continued

Urban Agriculture continued...

#### SPRING TERM

HOR-140	Soils & Fertilizers	3
HOR-141	Urban Agriculture Practicum/Spring	6
HOR-148	Farm Equipment	3
HOR-246	Organic Farming and Gardening	3
BA-285	Human Relations in Business	
or COMM-100	Basic Speech Communication	3-4

#### SUMMER TERM

HOR-146	Fruit and Berry Growing	3
HOR-284	Urban Agriculture Farm Experience/CWE	6

Credits required for certificate 60-64

## Water & Environmental Technology

### \* Professional Upgrade

#### ■ Certificate

#### ▲ Associate of Applied Science Degree

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

Program outcomes should include the skills necessary for entry-level employment in a variety of water-management industries; cities, counties and state agencies; and businesses, including wastewater treatment plants, drinking water treatment plants, environmental laboratories, source control programs, engineering firms, surface water management agencies, environmental agencies and organizations.

#### 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
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
— —	Human Relations requirement (see page 53) (Recommended: PSY-101)	3

#### WINTER TERM

BI-204	Elementary Microbiology	4
MTH-082C	Wastewater Math II	1
MTH-082D	Waterworks Math II	1
WET-120	Wastewater Operations II	3
WET-121	Waterworks Operations II	3
WET-122	Water Distribution/Wastewater Collection Systems	3
WET-123	Environmental Chemistry I	3

#### SPRING TERM

CS-120	Survey of Computing	4
WET-130	Wastewater Operations III	4
WET-131	Water Treatment	4
WET-132	Collection & Distribution Lab	1
WET-134	Environmental Chemistry II	2
WET-180	Water & Environmental Projects I	5

Credits required for certificate 57-58

### WATER & ENVIRONMENTAL TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

### WATER & ENVIRONMENTAL TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

#### FALL TERM CREDITS

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
— —	Speech elective (Recommended: COMM-111)	3-4

#### SPRING TERM

BA-131	Introduction to Business Computing	
or CS-121	Computer Applications	3-4
HE-252	First Aid/CPR	3
WET-109	Backflow Assembly Operation and Testing	3

Credits required for degree 92-98

### WATER & ENVIRONMENTAL TECHNOLOGY SUGGESTED GENERAL ELECTIVES

#### COURSE CREDITS

BA-101	Introduction to Business	4
COMM-111	Public Speaking	4
PS-203	U.S. Government: State & Local Institutions	4
PSY-240	Interpersonal Awareness & Growth	4
SOC-206	Institutions & Social Change	4

**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-009	Certification Review/Wastewater Operators	(CEU)
WET-009	Certification Review/Waterworks Operators	(CEU)
WET-009	Cross Connect. Backflow Assembly Tester	(4.0 CEU)
WET-009	Cross Connection Specialist Course	(3.2 CEU)
WET-009	Equipment Maintenance & Repair	(CEU)
WET-009	Pretreatment	(CEU)
WET-009	Water & Wastewater Short Schools	(2.1 & 2.3 CEU)
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

**High Purity Water**

*\* Professional Upgrade*

**■ Certificate**

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**

Program outcomes for the High Purity Water Certificate should include skills for entry-level employment in the water production technology field of the high-tech industry.

**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
<b>WINTER TERM</b>		
MTH-082E	Math for High Purity Water	1
WET-125	High Purity Water Production I	3
<b>SPRING TERM</b>		
WET-135	High Purity Water Production II	4
WET-180	Water & Environmental Projects I	5
<i>Credits required for certificate</i>		17

**Web Design & Development**

**▲ Associate of Applied Science Degree**

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**

Program outcomes include entry-level skills for employment in web design, production, programming, and development fields, as well as graphic design fields. Students will be exposed to a wide range of web-related programming languages, web development tools, and graphic design techniques and applications.

**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-262	Digital Photography & Photo-Imaging	3
CS-125H	HTML & Web Site Design	3
CS-140	Introduction to Operating Systems	4
CS-150	Computer Technician Orientation	3
<b>WINTER TERM</b>		
ART-225	Computer Graphics I	3
CS-133S	Introduction to JavaScript & Server Side Scripting	3
CS-179	Networking I	
or CS-275	Database Design	3
CS-195	Flash Web Development	3
<b>SPRING TERM</b>		
CS-135I	Advanced Web Design with Dreamweaver	3
CS-240L	Linux Administration	4
CS-234A	AJAX Web Development	3
CS-234P	PHP/MySQL Web Development	3

*Continued*

*Web Design & Development continued...*

#### SUMMER TERM

CS-280	Computer Science/CWE	3
MTH-065	Algebra II	4
WR-121	English Composition	4
— —	Human Relations requirement (see page 53)	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-275	Database Design	3
CS-280	Computer Science/CWE	3
WR-227	Technical Report Writing	4
— —	PE/Health requirement (see page 53)	1

#### SPRING TERM

ART-221	Flash 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

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

Program outcomes include entry-level skills for employment in web design, production, and graphic design. Students will be exposed to a wide range of web development tools and graphic design techniques and applications.

#### CAREERS

Career opportunities include web designer, web production staff, and graphic designer.

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

#### WEB DESIGN CERTIFICATE

#### FALL TERM

		CREDITS
ART-262	Digital Photography & Photo-Imaging	3
CS-125H	HTML & Web Site Design	3
CS-140	Introduction to Operating Systems	4
CS-150	Computer Technician Orientation	3

#### WINTER TERM

ART-225	Computer Graphics I	3
CS-133S	Introduction to JavaScript & Server Side Scripting	3
CS-179	Networking I	3
or CS-275	Database Design	3
CS-195	Flash Web Development	3

#### SPRING TERM

ART-226	Computer Graphics II	3
or CS-240L	Linux Administration	3-4
CS-135I	Advanced Web Design with Dreamweaver	3
CS-234A	AJAX Web Development	3
CS-234P	PHP/MySQL Web Development	3

#### SUMMER TERM

CS-280	Computer Science/CWE	3
MTH-065	Algebra II	4
WR-121	English Composition	4
— —	Human Relations requirement (see page 53)	3-4

*Credits required for certificate* 51-53



# Welding Technology

## \* Professional Upgrade

### ■ Certificate

### ▲ Associate of Applied Science Degree

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

Program outcomes include the skills necessary for entry-level employment in large, medium and small employers in the industries listed above as trained welders, flame and plasma cutters, fabricators, fitters and welding machine operators. Welders can advance to more skilled jobs with additional training and experience, such as technicians, supervisors, inspectors or instructors.

### CAREERS

Career opportunities include welding, fabrication, construction, production welding, CNC cutting machine operation and sheet metal.

### 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 Paul Wanner, 503-594-3387 or paulw@clackamas.edu or the Applied Technology Department, 503-594-3064.

### WELDING TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
MFG-107	Industrial Safety & First Aid	3
MTH-050*	Technical Mathematics I	3
WLD-100	Welders' Print Reading	3
WLD-111	Shielded Metal Arc Welding (Stick)	8
	or WLD-111A and WLD-111B Shielded Metal Arc Welding (Stick)	
SECOND TERM		
MFG-109	Computer Literacy for Technicians	3
WLD-112	Introduction to Shielded Metal Arc Welding Pre-Pipe Welding	2
WLD-113	Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)	8
	or WLD-113A and WLD-113B Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)	
WLD-200	Welders' Print Reading II	3
WR-101*	Communication Skills: Occupational Writing	3
THIRD TERM		
MFG-221	Materials Science	3
WLD-110	Welder Certification	1-4
WLD-115	Gas Tungsten Arc Welding (GTAW)	8
	or WLD-115A and WLD-115B Gas Tungsten Arc Welding (GTAW)	
WLD-280	Welding Technology/CWE	2
— —	Human Relations requirement (see page 53)	3
<i>Credits required for certificate</i>		53-56

### 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-111	Machine Tool Fundamentals I	3
WLD-211	Advanced Shielded Metal Arc Welding	4
WLD-250	Welding Fabrication I Beginning Project	4
— —	PE/Health requirement (see page 53)	1-3
FIFTH TERM		
WLD-210	Beginning Shielded Metal Arc Welding Pipe Welding	2
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	2-4

*Credits required for degree* 90-97

\* 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**

<b>COURSE</b>		<b>CREDITS</b>
WLD-102	Introduction to Welding	2
WLD-103	Blacksmithing and Traditional Iron Working	2
WLD-104	Introduction to CNC Plasma Cutting	2
WLD-150	Welding Processes	4
WLD-203	Blacksmithing and Traditional Iron Working II	2
WLD-205	Structural Steel Inspection, Codes & Standards	4
WLD-212	SMAW Pipe Welding	2
WLD-230	CNC Press Brake	2
WLD-261	Special Projects	2

## Entry Level Welding Technician

### ● Career Pathway Certificate

This program is designed with core competencies in mind while allowing the student flexibility to take other relevant welding courses.

**PROGRAM OUTCOMES**

This program prepares students for employment in entry level welding positions with a variety of industries. Course work focuses on the knowledge and skills to perform the following tasks: measure and cut material accurately; read and understand blueprints; weld fillet and groove welds in all positions with the process of their choice; repair their mistakes and fabricate parts.

**CAREERS**

Career opportunities include entry level jobs in cutting parts, blueprint reading and fitting, tacking, production welding, repair welding and fabrication.

For information contact Paul Wanner, 503-594-3387 or paulw@clackamas.edu or the Applied Technology Department, 503-594-3064.

**ENTRY LEVEL WELDING TECHNICIAN  
CAREER PATHWAY CERTIFICATE**

<b>COURSE</b>		<b>CREDITS</b>
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**

<b>COURSE</b>		<b>CREDITS</b>
MFG-111	Machine Tool Fundamentals I	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](http://www.clackamas.edu)

## Course Descriptions

AB	Collision Repair .....	123	GRN	Gerontology .....	170
ABE	Adult Basic Education .....	123	GS	General Science .....	171
ABR	Collision Repair and Refinishing .....	123	HD	Human Development & Career Planning .....	171
AM	Automotive Service Technology .....	124	HDF	Family Studies .....	172
ANT	Anthropology .....	125	HE/HPE	Health .....	173
ART	Art .....	125	HIM	Health Informatics .....	174
ASC	Arts and Sciences .....	129	HOR	Horticulture/Landscape/Urban Agriculture... ..	175
ASE	Adult High School Diploma .....	129	HPD	Healthcare Professional Development .....	178
ASL	American Sign Language .....	132	HS	Human Services .....	178
BA	Business Administration .....	132	HST	History .....	180
BI	Biology .....	136	HUM	Humanities .....	180
BRI	Bridges .....	137	J	Journalism .....	181
BT	Business Technology .....	138	LIB	Library .....	182
CAD/CDT	Computer-Aided Drafting .....	139	MA	Medical Assistant .....	182
CH	Chemistry .....	139	MET	Mechanical Engineering Technology .....	183
CIV	Citizenship .....	140	MFG	Manufacturing Technology .....	183
CJA	Criminal Justice .....	140	MTH	Mathematics .....	186
CLA	Clinical Laboratory Assistant .....	142	MUP	Music Performance .....	188
COMM	Communication Studies .....	143	MUS	Music .....	192
CS	Computer Science .....	144	NRS	Nursing .....	196
CWE	Cooperative Work Experience .....	147	NUR	Nursing Assistant .....	198
DA	Dental Assistant .....	148	OST	Occupational Skills Training/CWE .....	198
DMC	Digital Multimedia Communications .....	149	PE	Physical Education .....	198
EC	Economics .....	151	PH	Physics .....	198
ECE	Early Childhood Education .....	151	PHL	Philosophy .....	199
ED	Education .....	153	PIE	Program for Intensive English .....	199
EET	Electronics Engineering Technology .....	155	PS	Political Science .....	201
EL	Study Skills .....	156	PSY	Psychology .....	202
EMT	Emergency Medical Technology .....	156	R	Religious Studies .....	202
ENG	English .....	156	RD	Reading .....	203
ENGR	Engineering Sciences .....	158	RE	Real Estate .....	203
ENL	English as a Non-Native Language .....	159	RET	Renewable Energy Technology .....	203
ERM	Energy & Utility Resource Management .....	160	SBM	Small Business Management .....	204
ESH	Environmental Safety & Health .....	161	SM	Microelectronics Systems Technology .....	205
ESL	English as a Second Language .....	161	SOC	Sociology .....	205
ESR	Environmental Science .....	164	SP	Speech .....	205
EST	Employment Skills Training .....	164	SPN	Spanish .....	206
FN	Food & Nutrition .....	164	SSC	Social Science .....	206
FR	French .....	165	TA	Theatre Arts .....	207
FRP	Fire Science (Wildland) .....	165	TTL	Transportation & Logistics .....	208
G	Geology .....	167	WET	Water & Environmental Technology .....	209
GED	General Educational Development .....	168	WLD	Welding Technology .....	210
GEO	Geography .....	168	WR	Writing .....	212
GER	German .....	169	WS	Women's Studies .....	214
GIS	Geographic Information Systems .....	170	Z	Zoology .....	214

**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.

## *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-112 Collision Repair Welding I**

1-2 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, 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 safe use of tools; basic metal work and finishing; use of plastic 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.

### **AB-133 Collision Repair II/Structural**

6 credits, Fall/Winter/Spring

Repair major body damage using modern frame and body 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.

### **AB-149 Collision Repair Estimating I**

2 credits, Fall

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 - Shoplink**

2 credits, Winter

Provides detailed instruction in the use of modern computerized estimating systems in the collision repair field. Focus is on Shoplink software. Prerequisite: AB-149.

### **AB-151 Collision Repair Computerized Estimating - CCC ONE**

2 credits, Spring

Provides detailed instruction in the use of modern computerized estimating systems in the collision repair field. Focus is on CCC ONE software. Prerequisite: AB-149.

### **AB-222 Collision Repair III/Advanced Structural**

6 credits, Fall/Winter/Spring

Major collision repair with a systems approach: frame and structure, panels, suspension and brakes, electrical and cooling systems. Emphasis on frame and unibody repair, replacement of welded body panels, and diagnosis and repair of related damage. Prerequisite: AB-133.

### **AB-224 Collision Repair IV/Advanced Structural**

6 credits, Fall/Winter/Spring

Advanced frame and unibody repair procedures. Electronic measurement and dimensioning, repair documentation, brakes suspension, and alignment as they relate to collision repair. Prerequisite: AB-222.

### **AB-226 Collision Repair V/Advanced Structural**

6 credits, Fall/Winter/Spring

Uses the latest high quality, productive techniques and equipment to repair vehicles to pre-collision condition. Covers the refined collision repair processes for today's workplace. Prerequisite: AB-224.

### **AB-235 Collision Repair Welding III**

2 credits, Winter/Spring

Aluminum welding for collision damage repair. Gas Metal Arc Welding (GMAW) and Gas Tungsten Arc Welding (GTAW) processes are covered along with related weld repair techniques and equipment/safety procedures. Prerequisite: AB-123.

### **AB-280 Collision Repair/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Work-based learning experience in an auto body repair shop. Required: Instructor consent & a CWE seminar.

**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. Individual schedules are arranged. 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.

## *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 top coats, primers and sealers. 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.

**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.

**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-180 Collision Refinishing/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. Work-based learning experience in an auto refinishing shop. Required: Instructor consent & a CWE seminar.

**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.

**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 more challenging, with standards and expectations set higher. Prerequisite: ABR-225.

**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-106 Fix Your Own Car**  
2 credits, not offered every term

A do-it-yourself course for non-automotive majors who want to work on their own cars. Includes: oil change, lubrication, fluid checks, brakes, cooling system, electrical system, safety, and other quick services. May be repeated for up to 12 credits.

**AM-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. Required: Current enrollment in or successful completion of: AM-129, AM-130, AM-131, AM-133, AM-224 or AM-235.

**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.

**AM-123 General Auto Repair III**  
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 third term automotive students. Prerequisite: AM-122.

**AM-129 Electrical Systems**  
7 credits, Fall

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 RD-080 or placement in RD-090.

**AM-130 Brake Systems**  
7 credits, Fall

Theory and lab course covers basic hydraulics, brake fluids, friction material, seals, disc and drum brakes, disc and drum brake servicing equipment, hydraulic and vacuum brake boosters and anti-lock braking systems. Prerequisite: Pass MTH-020 or placement in MTH-050, pass RD-080 or placement in RD-090.

**AM-131 Chassis Systems**  
7 credits, Winter

A theory and lab course covering the design, construction, service, and repair of front and rear suspension systems, wheels and tires, steering systems, and alignments. Prerequisite: Pass MTH-020 or placement in MTH-050, pass RD-080 or placement in RD-090.

**AM-133 Engine Systems**  
7 credits, Spring

A course in engine repair. Includes design, construction, testing, maintenance, repair, and rebuilding. Prerequisite: Pass MTH-020 or placement in MTH-050, pass RD-080 or placement in RD-090.

**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. Required: 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. Required: 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. Required: 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 RD-080 or placement in RD-090.

**AM-228 Service Shop Management**  
4 credits, Spring

Course designed to familiarize students with the responsibilities of the parts manager, service manager and service writer. Prerequisite: Pass MTH-020 or placement in MTH-050, pass RD-080 or placement in RD-090.

**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. Prerequisite: Pass MTH-020 or placement in MTH-050, pass RD-080 or placement in RD-090.

**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.

**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.

**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.

**AM-280 Auto Mechanics/CWE**  
2-6 credits  
Fall/Winter/Spring/Summer

Cooperative work experience. Work-based learning experience in an auto repair shop or auto dealership. Required: Instructor consent & a CWE seminar.

**ANT****Anthropology****ANT-101 Physical Anthropology**  
4 credits, not offered every term

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 RD-090 or placement in RD-115.

**ANT-102 Archaeology & Prehistory**  
4 credits, not offered every term

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 RD-090 or placement in RD-115.

**ANT-103 Cultural Anthropology**  
4 credits, not offered every term

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 RD-090 or placement in RD-115.

**ANT-231 Indians of the Pacific Northwest**

4 credits, not offered every year

Survey of Native American cultures in the Pacific Northwest region from prehistoric times to the present. Course is based on archeological, ethno-historical, and ethnographic evidence. Includes contemporary issues in Northwest Native American life. Recommended: Pass RD-090 or placement in RD-115.

**ANT-232 Indians of North America**  
4 credits, not offered every year

A broad survey of the cultures, arts, and history of Native Americans north of Mexico. Uses archaeological, ethno-historical, and ethnographic evidence to explore the diversity of Native American cultures from prehistoric times to the present. Includes contemporary issues in Native American life. Recommended: Pass RD-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. Required: Instructor consent & a CWE seminar.

**ART****Art****ART-100A Jewelry Making Techniques**  
1 credit, not offered every term

Various topics will introduce techniques in: construction, forming, fabrication, soldering, inlay, etching, mold making, casting, stone setting 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 term

Various topics will introduce techniques in clay construction, firing, glazing and other ceramic methods. Students will be encouraged to create and design their own work using clay and clay materials which consider meaning and function. 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 to 20th century.

**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. Prerequisite: ART-106/DMC-106. 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. Prerequisite: ART-107/DMC-107. 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, Winter

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, not offered every term

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. Assignments involve observational drawing 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. Assignments involve direct observation and its relationship to volume and form on a two-dimensional plane. Assignments include drawings, assigned readings and group critiques of drawing projects. This course emphasizes the human form.

**ART-133 Drawing**

4 credits, Spring

Introduces drawing tools, materials, techniques, elements of composition; line, gesture, color and value. Assignments involve observational drawing and its relationship to volume and form on a two-dimensional plane. Assignments include drawings, assigned readings 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: 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: 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-162 or instructor consent. Required: 35mm camera with adjustable exposure controls.

**ART-194 Watercolor Painting**  
3 credits, not offered every term

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-197 Gallery Design & Management**  
3 credits, not offered every term

Introduction to the fundamental goals and methodology of managing a visual arts gallery. This course examines issues of contemporary art while providing practical experience in curating, preparation and installation of exhibitions, fund raising, grant writing, public relations and related gallery objectives.

**ART-204 History of 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 RD-090 or placement in RD-115; pass WR-095 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 RD-090 or placement in RD-115; pass WR-095 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 RD-090 or placement in RD-115; pass WR-095 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, not offered every 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, or instructor consent.

**ART-225 Computer Graphics I**  
3 credits, Fall/Winter/Spring

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, Fall/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 background in ceramics. Explore 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 background in ceramics. Explore methods of working with clay including pinching, coiling, slab construction, and throwing on the wheel. Introduction to glazing and firing methods. Research into ceramics from the 10th to the 19th centuries. Develop fundamental skills to foster artistic growth.

**ART-252 Ceramics/Beginning**  
4 credits, Spring

Broad general background in ceramics. Explore methods of working with clay including pinching, coiling, slab construction, and throwing on the wheel. Introduction to glazing and firing methods. Research into contemporary and historical ceramics. 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 contemporary and historical ceramics. Prerequisites: Pass ART-250, ART-251 and ART-252 or instructor consent.

**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 contemporary and historical ceramics. Prerequisites: Pass ART-250, ART-251 and ART-252 or instructor consent.

**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 contemporary and historical ceramics. Prerequisites: Pass ART-250, ART-251 and ART-252 or instructor consent.

**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. Prerequisite: Pass CS-090 or placement in CS-120 or instructor consent.

**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. Required: Instructor consent & a CWE seminar.

**ART-281 Painting/Beginning**  
4 credits, Fall

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. Assignments include paintings, readings and critique of 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. Assignments include paintings, 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. Direct observation of reality in relation to volume and form on a two-dimensional plane. Assignments include paintings, readings and critique of projects.

**ART-284 Painting/Intermediate**  
4 credits, Fall

Utilizes advanced painting concepts, materials, and techniques with emphasis on composition, color, gesture, and value. Problems deal with observation of reality in relation to volume and form on a two-dimensional plane. Assignments include paintings, readings and critique of projects. Prerequisites: 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. Problems deal with observation of reality in relation to volume and form on a two-dimensional plane. Assignments include paintings, readings and critique of projects. Prerequisites: 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. Problems deal with observation of reality in relation to volume and form on a two-dimensional plane. Assignments include paintings, readings and critique of projects. Prerequisites: 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, human form, 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 armatures, combining media, and flexible molds will be explored. Concepts of aesthetics in formal composition will be explored through projects, lectures, and critiques. Historical reference will be explored.

**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, mold making, welding, carving, human form and assemblage will be explored. Reference to historical and contemporary aesthetic content will be presented.



**ASC****Arts and Sciences**

See also General Science (GS).

**ASC-200 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 integrating 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 WR-095 or placement in WR-121.

**ASC-201 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 integrating 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 WR-095 or placement in WR-121.

**ASC-202 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 integrating 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 WR-095 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, division of whole numbers, fractions and decimals; percentage; measurement; graphs; ratio/proportion; basic principles of algebra and geometry. Course is geared to those students who may need a slower-paced 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 while basic algebra and geometry are integrated throughout the course. The use of up-to-date technology is integrated. A scientific calculator is required. Required: Instructor consent.

**ASE-012 Applied Math II**  
.5 high school credit  
Fall/Winter/Spring/Summer

Presents the use of numbers and operations of arithmetic while integrating algebraic and geometric concepts throughout the course. Current technology is also incorporated. Scientific calculator required. 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. 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 of capitalization, punctuation, and spelling, with emphasis on paragraph construction. Includes practical applications of sentence patterns, subject and verb agreement, and other writing skills. Required: Instructor consent.

**ASE-017 Advanced English**  
.5 high school credit  
Fall/Winter/Spring/Summer

Language arts course emphasizing grammar, sentence structure, style, clarity, logic, organization, and paragraph composition. Emphasis on transition from paragraph to essay. Required: Instructor consent.

**ASE-020 Literature I**  
.5 high school credit  
Fall/Winter/Spring/Summer

Course focuses on literature from the 17th-19th centuries, including the elements and examples of prose, poetry, and drama that produce good literature. Required: Instructor consent.

**ASE-026 Health I**  
.5 high school credit  
Fall/Winter/Spring/Summer

Presents issues impacting psychosocial health; applies prevention and risk-reduction concepts to health related problems. Determines the impact of behaviors that pose a threat to healthy living. Required: Instructor consent.

**ASE-028 Global Studies I**  
.5 high school credit  
Fall/Winter/Spring/Summer

Focuses on geographic tools (maps, globes, charts, graphs) to explain and analyze geographical relationships and area. Identifies areas and physical features that have impacted historical and modern issues and events. 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 among social, cultural, historical, economic, and environmental processes that change the characteristics of places and regions throughout the globe over time. Required: Instructor consent.

**ASE-032 US History I**

.5 high school credit  
Fall/Winter/Spring/Summer

Focuses on the settlement of America to 1900, emphasizing the development of economic, political and social systems. Analyzes causes and effects of wars and domestic and foreign policy and examines the growth of technology. Required: Instructor consent.

**ASE-033 US History II**

.5 high school credit  
Fall/Winter/Spring/Summer

Focuses on the settlement of America from 1890 to the present, emphasizing the development of economic, political and social systems. 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

Introduction to the basic principles of American government, including the branches of federal, state, and local government and how they interact. Required: Instructor consent.

**ASE-035-Careers I**

.5 high school credit  
Fall/Winter/Spring/Summer

Students explore skills, interests, and related careers. 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 patterns, use techniques for personal income planning, record keeping, use of credit, purchase goods/services, and rights and responsibilities in the marketplace. Students acquire basic technology skills. Required: Instructor consent.

**ASE-037 Basic Developmental Reading**

.5 high school credit  
Fall/Winter/Spring/Summer

Develops basic reading skills, including phonics, pronunciation, spelling, word attack skills, basic vocabulary, and comprehension skills. Elective high school credit only for high school diploma requirements. Required: Instructor consent.

**ASE-038 Intermediate Reading**

.5 high school credit  
Fall/Winter/Spring/Summer

Word attack, vocabulary, spelling, and reading comprehension skills to improve basic reading abilities and textbook reading strategies. 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. 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 for up to 2 high school credits. Required: Instructor consent.

**ASE-043 Cooperative Work Experience**

.5-1.5 high school credits  
Fall/Winter/Spring/Summer

Cooperative Work Experience. Provides field experience for developmental education students. Students are placed in non-paying or paid positions both on and off campus and meet weekly in a seminar. 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 child development, applying appropriate practices for various developmental stages, building self-esteem, improving personal communication skills and developing survival skills. May be repeated for 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 for 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 documents and law in relation to American ideals and the roles, rights, and responsibilities of citizens. Explores interactions between the U.S. and other countries in a global community. Required: Instructor consent.

**ASE-056 Personal Finance 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-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 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

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, Winter

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, Spring

Presents principles of the plant kingdom in a hands-on outdoor setting. Explores plant growth, function, adaptations, and processes, ecosystem with 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 education 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 in the context of 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 RD-090 or placement in RD-115; pass WR-095 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.

**ASL-211 Conversational American Sign Language**  
3 credits, not offered every year

An immersion course in the concepts of ASL. Emphasizes the development of receptive signing skills and expands communicative abilities. To apply to a university interpreter program, further studies are needed. Prerequisite: Current enrollment in or successful completion of ASL-103 or instructor consent.

**BA*****Business Administration*****BA-101 Introduction to Business**  
4 credits, Fall/Winter/Spring

Introduces the American business system in a changing global environment. Disciplines covered include economics, entrepreneurship, formation, accounting, finance, marketing, and management. Recommended: Pass RD-090 or placement in RD-115.

**BA-103 Business Strategies for Computer Consultants**  
3 credits, not offered every term

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; simple interest; present value and future value of single sums and annuities; gains, losses and valuations of stocks, bonds, mutuals, 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.

**BA-109 IFRS Accounting Standards**  
1 credit, not offered every term

Explains the what, how, when, and why of the IFRS (International Financial Reporting Standards) which are scheduled to be fully implemented in the U.S. by 2014. While the requirements are not locked in at this point (and are still evolving) students graduating or transferring in accounting majors must be aware of, understand, and be able to discuss the IFRS standards and how they will affect small, medium, and large business financial accounting reports. This is a temporary course, when IFRS is implemented in 2014, the concepts will be integrated into the transfer accounting courses, BA-211, 212, and 213. Prerequisites: BA-111 or BA-211.

**BA-111 General Accounting I**  
4 credits, Fall/Winter/Spring

Full-cycle recordkeeping and payroll for service and merchandising businesses; topics include subsidiary ledgers, journalizing, posting, preparing financial statements, and end-of-period adjustments for small businesses. Recommended: Pass RD-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.

**BA-120 Project Management Fundamentals**  
3 credits, Fall

A 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 project communication, risk, procurement, and quality. Major topics include project communication planning and 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 approaches to project quality planning, quality assurance, control and improvement. Required: Current enrollment in or successful completion of BA-120.

**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 & BT-177 or instructor consent.

**BA-130 Leadership in Literature**  
4 credits, not offered every year

Examines the nature of leadership by analyzing characters who are leaders in major literary works. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 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 RD-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 RD-090 or placement in RD-115.

**BA-160 Purchasing I**  
3 credits, not offered every year

Covers fundamentals of purchasing, including the role of the purchasing function, purchasing objectives and policies, operating procedures, purchase descriptions and specifications, sources of supply, types of contracts and ordering agreements, legal considerations, and ethical and professional standards.

**BA-161 Purchasing II**  
3 credits, not offered every year

Covers more advanced purchasing concepts and techniques, such as win-win negotiations, total cost management, supplier management, continuous quality improvement, value analysis and value engineering, and inventory management. Prerequisite: Pass BA-160 or instructor consent.

**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.

**BA-205 Solving Communication Problems 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 RD-090 or placement in RD-115. Prerequisites: Pass BA-131 and WR-121.

**BA-206 Management Fundamentals**  
4 credits, Fall/Winter/Spring

Concepts and theories of management with focus on planning, organizing, leading, and controlling. Organizational structures, planning principles, global management, managing change and culture, effective communication, and motivation. Recommended: Pass RD-090 or placement in RD-115.

**BA-208 Employee Labor Relations**  
4 credits, Winter

Provides a legal and historical overview of employee and labor relations in 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

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 RD-090 or placement in RD-115.

**BA-212 Financial Accounting II**  
4 credits, Fall/Winter/Spring

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.

**BA-213 Decision Making with Accounting Information**  
4 credits, Fall/Winter/Spring

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.

**BA-214 Business Communication**  
3 credits, not offered every year

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.

**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 RD-090 or placement in RD-115. Prerequisite: Pass BA-213.

**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 RD-090 or placement in RD-115.

**BA-218 Personal Finance**  
3 credits, Fall/Winter/Spring

Analysis and personal application of basic principles in budgeting, financial decision-making, use of credit, savings and investing, home ownership, risk management, estate planning, and other major personal finance topics. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass MTH-020 or higher, or pass BA-104.

**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.

**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 RD-090 or placement in RD-115.

**BA-224 Human Resource Management**  
4 credits, Fall/Spring

Traditional, current, and emerging personnel practices. Practical and realistic approach to human resource management, employee welfare, working conditions, selection and placement, personnel functions, and the responsibilities of the personnel director. Recommended: Pass RD-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, and presentation. Prerequisites: Pass WR-121 & pass BA-205 or instructor consent.

**BA-226 Business Law I**  
4 credits, Fall/Winter/Spring

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 RD-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.

**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.

**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 RD-090 or placement in RD-115. Prerequisite: Pass BA-224.

**BA-238 Sales**  
4 credits, Spring

Professional consultative selling techniques and how professional selling fits into a comprehensive marketing program as well as daily life. Interactive exercises will be used throughout the course that emphasize face-to-face communication skills and relationship building. Recommended: Pass RD-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 RD-090 or placement in RD-115, BA-101.

**BA-249 Retailing**  
3 credits, not offered every term

Provides an understanding of the types of businesses, strategies, operations, formats and environments through which retailing is carried out. Takes a multi-disciplinary approach to consider the process and structure of retailing. Recommended: Pass RD-090 or placement in RD-115.

**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 RD-090 or placement in RD-115.

**BA-251 Supervisory Management**  
3 credits, Fall/Winter

Role and responsibilities of the first-line supervisor or manager. Analyzing business, dealing with change, staffing and scheduling, leadership, decision-making, motivational skills, legal considerations, and managing teams. Recommended: Pass RD-090 or placement in RD-115.

**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 compensation 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 class 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 RD-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. Prerequisite: Pass BA-101.

**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

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. Required: Instructor consent & a CWE seminar.

**BA-281 Business/CWE**  
3-6 credits, Fall/Winter/Spring

Cooperative work experience. On-the-job experience in a business related to the student's major course of study. Under supervision of instructor and employer. Required: Instructor consent & a CWE seminar.

**BA-285 Human Relations in Business**  
4 credits, Fall/Winter/Spring

Discusses psychological principles that help build relationships among employees and employers, including goal setting, motivation, communication, leadership, evaluation, conflict management, individual and group behavior. Recommended: Pass RD-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 placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 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 placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 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 placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**BI-112 General Biology for Health Sciences**

4 credits, Fall/Winter/Spring/Summer

One-term preparatory biology 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 student to enter BI-231, Anatomy & Physiology; and BI-234, Introductory Microbiology. Recommended: Pass MTH-060 or placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Corequisite: CH-112 strongly recommended.

**BI-120 Introduction to Human Anatomy & Physiology**

4 credits, Fall

Laboratory course designed to serve the students in the Career Technical programs: Medical Assistant and Clinical Assistant Laboratory 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.

**BI-160 Bird ID & Taxonomy**

3 credits, not offered every year

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. Corequisite: BI-160L.

**BI-160L Bird ID & Taxonomy Lab**

1 credit, not offered every year

Lab course consisting of weekend field trips and online labs. This lab accompanies the BI-160, Bird ID and Taxonomy lecture. Focuses on field identification of common Oregon birds by sight, sound, and habitat. Field trips required. Corequisite: BI-160.

**BI-163 Malheur Field Trip**

1 credit, not offered every year

Four day field trip. Study of plants, animals, geology, and history of High Desert Country at Malheur Environmental Field Station in southeast Oregon. Required: Instructor consent.

**BI-165C Natural History of the Oregon Coast**

3 credits, not offered every year

Explores the natural processes that form our Northwest coastal environment: geologic development, shoreline processes, oceanography, and environmental hazards. Topics include the ecology of marine mammals, birds, estuaries, tidepools, sand dunes, and coastal forests.

**BI-165CL Natural History/Oregon Coast Lab**

1 credit, not offered every year

A lab to accompany the BI-165C, Natural History of the Oregon Coast, lecture. Field trips and exercises focus on the plants, animals, geology, and environmental issues of the Oregon coast. Corequisite: BI-165C.

**BI-165D Natural History of SW Deserts**

4 credits, Spring

A lab course studying plants, animals, geology, and environmental issues of the Great Basin Region and Death Valley National Park. On-site study. A nine-day trip through Southwestern United States desert regions. Required: Instructor consent.



**BI-165T Natural History of Tropical Ecosystems**  
4 credits, Spring

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-204 Elementary Microbiology**  
4 credits, Winter

A lab course with environmental focus. Explores microscopic life, its importance in the environment, industry and water-borne pathogens. Labs provide practice with aseptic technique and introduces tools and methods used in the study of microorganisms.

**BI-211 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 an evolutionary approach to cell biology. 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, epigenetics, evolution, and an introduction to tissues, organs and organ systems. Recommended: Pass MTH-105 or pass MTH-111 with a C or better or placement in MTH-112; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Corequisite: CH-104 or CH-221.

**BI-212 Biology for Science Majors; Animal Biology**  
5 credits, Winter

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. Corequisite: CH-105 or CH-222.

**BI-213 Biology for Science Majors; Plant Biology & Ecology**  
5 credits, Spring

The third quarter of a three-quarter sequence of a laboratory course for science majors and pre-professional students. It emphasizes an evolutionary approach to plant biology and ecology; including plant diversity, plant organ systems and their functions, photosynthesis and transpiration, productivity and energy transfer, nutrient cycles, population dynamics, ecosystems and environmental issues. Prerequisite: Pass BI-212. Corequisite: 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 physical education or medically-related fields. Includes body organization, terminology, tissues, and a study of the integumentary, skeletal, and nervous systems. Animal organ dissection required. Recommended: Pass MTH-095 with a C or better or placement in MTH-105 or MTH-111; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass BI-112 (preferred), or pass BI-211 or both BI-101 and BI-102. Pass CH-112 (preferred), or pass CH-104 and CH-105, or pass CH-221 and CH-222.

**BI-232 Human Anatomy and Physiology II**  
4 credits, Fall/Winter/Spring/Summer

A 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.

**BI-233 Human Anatomy and Physiology III**  
4 credits, Fall/Winter/Spring/Summer

A 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.

**BI-234 Introductory Microbiology**  
4 credits, Fall/Winter/Spring

An introductory microbiology lab course 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.

**BI-280 Biology/CWE**  
2-6 credits  
Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job work experience in the field of biology. Required: Instructor consent & a CWE seminar.

**BRI**

Courses with this prefix will not transfer to a four-year institution.

**Bridges**

**BRI-090 Bridges**  
3 credits, not offered every term

Designed to assist young adults (17-23) in successfully transitioning to higher education by providing awareness of educational options and resources; overcoming barriers; exploring attitudes, abilities and interests; goal setting; and presenting opportunities to aid students in college success; therefore enabling them to take full advantage of options that will positively shape their future. Prerequisites: GED or High School Diploma, and/or instructor consent.

**BRI-095 Bridges to Work**  
3 credits, not offered every term

Designed to assist young adults (17-23) in successfully transitioning to higher education through providing awareness of educational options and resources; overcoming barriers; exploring attitudes, abilities and interests; goal setting; and presenting opportunities to aid students in college success, therefore enabling them to take full advantage of options that will positively shape their future. Prerequisites: GED or High School Diploma, and/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**

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, Fall**

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 RD-090 or placement in RD-115.

### **BT-120 Personal Keyboarding**

**2 credits, Fall/Winter/Spring**

Basic instruction on electronic alphanumeric keyboard. Provides practice for speed and accuracy with individual program. Students will develop the necessary skills to effectively use the Internet, use e-mail, and create simple documents.

### **BT-121 Data Entry**

**1 credit, Fall/Winter**

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**

Designed to improve typing proficiency using microcomputers. Students will refine and further develop speed and accuracy skills learned in BT-120 Personal Keyboarding. 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 RD-090 or placement in RD-115.

### **BT-125 Business Editing II**

**3 credits, Winter**

Course follows BT-124 and will continue to build communication and writing skills by studying correct grammar, spelling, punctuation, vocabulary usage, and writing principles. Prerequisite: Pass BT-124 with a C or better.

### **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. Prerequisite: Pass BT-120 or instructor consent. Recommended: 35 words per minute typing skill.

### **BT-161 Word II**

**3 credits, Spring**

Intermediate level course where students learn more advanced features of the Microsoft Word software program. This course is designed for students who have completed BT-160 Word I. Prerequisite: Pass BT-160. Recommended: Pass BT-124 and 40 words per minute typing skill.

### **BT-172 Introduction to Microsoft Outlook**

**2 credits, Spring**

Introductory course using Microsoft's Outlook application as a tool to send and receive email, organize schedules and events, and maintain contact lists, to-do lists, and tasks. The material covered in this course teaches the necessary skills required in those business environments that use Outlook.

### **BT-173 Introduction to Microsoft PowerPoint**

**2 credits, not offered every year**

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.

### **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. Recommended: 45 words per minute typing skill. Prerequisite: Pass BT-161 with a C or better.

**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. Prerequisite: BA-205, BA-228, BT-125, BT-216, BT-262, & CS-135S.

**CAD & 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.

**Computer-Aided Drafting**

For additional information contact the Manufacturing Department at 503-594-3318.

**CAD-160 Revit Architecture**  
3 credits, not offered every term

Introduction to the basic principles in Revit Architecture. From design to construction documents, students will create floor plans using walls, doors, windows, and add furniture fixtures, curtain walls, floors, ceiling grids, and generate elevations, sections, details and schedules directly from the model.

**CDT-102 Sketching and Problem Solving**  
1-3 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**  
1-4 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**  
1-3 credits, Fall/Spring

An introduction to the SolidWorks parametric mechanical design software. Students will design 3D solid parts and assemblies, and develop 2D documentation from them.

**CDT-223 Inventor Fundamentals**  
1-3 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 of JAVASCRIPT, use and manipulation of graphic image files, animating web page graphics, HTML forms.

**CDT-225 Advanced SolidWorks**  
1-3 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. Observation, measurement, composition, stoichiometry, atomic structure, periodic table, bonding, and nomenclature. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-095, pass RD-090 or placement in RD-115.

**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 (CH-112 not accepted).

**CH-106 Introductory Chemistry**  
5 credits, Spring/Summer

A lab course discussing organic and biochemistry. Prerequisite: Pass CH-105.

**CH-112 Chemistry for Health Sciences**  
4 credits, Fall/Winter/Spring/Summer

One-term preparatory biology course for students who want to take BI-231, Anatomy & 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 with a C or better or placement in MTH-095. Pass RD-090 or placement in RD-115. Corequisite: BI-112 strongly recommended.

**CH-150 Preparation for 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.

**CH-221 General Chemistry**  
5 credits, Fall/Winter

Transfer lab course for science, engineering, and professional majors. 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.

**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.

**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.

**CH-241 Organic Chemistry I**  
5 credits, not offered every year

First term of a transfer sequence lab course meeting the organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering, and biology majors. Prerequisite: Pass CH-223.

**CH-242 Organic Chemistry II**  
5 credits, not offered every year

Second term of a transfer sequence lab course meeting organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering, and biology majors. Prerequisite: Pass CH-241.

**CH-243 Organic Chemistry III**  
5 credits, not offered every year

Third term of a transfer sequence lab course meeting organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering, and biology majors. Prerequisite: Pass CH-242.

**CH-280 Chemistry/CWE**  
1-6 credits, not offered every term

Provides students with on-the-job experience in the field of chemistry. A weekly seminar is required and covers on-the-job issues and procedures. Supervision and evaluation of the student's job performance provided by qualified college staff and a supervisor of the employment site. Can be repeated for up to 12 credits. Prerequisite: Students must have previously completed 9 credits at CCC, declared a major and secured a job related to that major. Required: Instructor consent and a CWE seminar.

**CIV**

Courses with this prefix will not transfer to a four-year institution. Courses are intended for ESL students.

**Citizenship****CIV-007 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, Spring

Examines the social problem of crime, including the process of making and breaking laws as well as society's reaction to the phenomenon. Provides a multidisciplinary study of the causes of crime, including its distribution across social strata and demographics. Focuses on theories of criminal behavior and specific types of crime.

**CJA-110 Introduction to Law Enforcement**  
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 emergency procedures and types of patrols. Examines crime prevention theory and community policing.

**CJA-120 Judicial Process**  
3 credits, Winter

Studies the judicial and social processes from arrest through appeal, 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.

**CJA-130 Introduction to Corrections**  
3 credits, Spring

Examines the history, organization, and development of corrections in the United States, including sentencing, incarceration, community corrections and the juvenile justice system. Reviews the use of the death penalty. Identifies trends in corrections.

**CJA-134 Correctional Institutions**  
3 credits, Fall

Analyzes prisons, jails and other correctional institutions. Discusses punishment history and rationale. Identifies functions of custodial staff and describes institutional procedures: reception, classification, program assignment, and release. Studies prison management systems and examines juvenile facilities.

**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, Fall

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, Winter

Surveys the nature and extent 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. Prerequisite: Pass CJA-101.

**CJA-203 Crisis Intervention**  
3 credits, Spring

Examines crisis intervention as it applies to emergency service workers. Includes psychodynamics of family crisis; alcohol/drug related problems; suicide; sexual assault victims; domestic violence; mentally disturbed individuals; neglected, battered, abused children.

**CJA-210 Criminal Investigation I**  
3 credits, Fall

Introduces the history, theory, and principles of criminal investigation in the justice system. Describes crime scene investigation and courtroom aspects of crime scenes including interviews, evidence, surveillance, 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.

**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.

**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-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, Winter

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 on 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. Prerequisites: Pass WR-121 with a grade of C or better.

**CJA-252 Introduction to Restorative Justice**  
3 credits, Fall

Provides a critical introduction to the history, values, principles, and practices of 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

Cooperative work experience. Supervised experience criminal justice, corrections, juvenile corrections, or related occupations. Corequisite: CWE-281. Required: Instructor consent. Prerequisite: CJA-170.

**CJA-281 Criminal Justice/Corrections/  
CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Supervised experience criminal justice, corrections, juvenile corrections, or related occupations. Corequisite: CWE-281. Required: Instructor consent. Prerequisite: CJA-170.

**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

Introduction to healthcare systems and trends, ethical and legal responsibilities, personal and workplace safety, infection control, professionalism, life-long learning, and communication.

**CLA-101 Clinical Laboratory Assistant  
Skills I**

4 credits, Fall

Presents the student with a general overview of a clinical laboratory, including state and federal regulations, quality assurance practices, laboratory terminology, staffing, and a basic understanding of quality laboratory testing. The majority of the competencies required in the Core Module of NAACLS's Clinical Laboratory Assistant program will be covered. Required: Students must be admitted into the current CLA cohort, or instructor consent.

**CLA-102 Clinical Laboratory Assistant  
Skills II**

4 credits, Winter

Addresses hematology and urinalysis theory with assistant level 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. Students will demonstrate the use of controls, standards and laboratory protocols. Required: Instructor consent. Prerequisite: Pass CLA-101.

**CLA-103 Clinical Laboratory Assistant  
Skills III**

4 credits, Spring

Continuation of CLA-101 and 102 with emphasis on Microbiology, Clinical Chemistry and Serology/Immunology. The Clinical Laboratory Assistant Scope of Practice and Professionalism at the workplace will be discussed in detail. Required: Students must be admitted into the current CLA cohort, or instructor consent. Prerequisite: Pass CLA-102.

**CLA-115 Laboratory Administrative  
Skills**

2 credits, Winter

Designed for the clinical 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**

2 credits, Spring

Designed for the Clinical Laboratory Assistant student to instill a broad understanding of blood/serum collection and specimen handling techniques used in ambulatory and medical center laboratories and to prepare students to perform these tasks effectively and safely in the workplace. Universal and standard precautions will be stressed. The students will collect blood samples on their lab partners throughout the term. Required: Students must be admitted into the current CLA cohort, or instructor consent.

**CLA-119 Phlebotomy/Laboratory/  
Practicum I**

3 credits, Winter

Supervised unpaid assignment in area medical center laboratories to gain practical experience. 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. Required: Students must be admitted into the current CLA cohort, or instructor consent. Prerequisite: Pass CLA-119.

**CLA-125 Introduction to Clinical  
Research**

2 credits, Spring

An overview of research as applied through clinical studies. Participants will learn elements of proper research techniques as conducted under the supervision of a physician or Ph.D. Required: Students must be admitted into the current CLA cohort, or instructor consent.

**CLA-130 Specimen Collection**

1 credit, Spring

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. Required: Students must be enrolled in current CLA cohort, or instructor consent.

**COMM****Communication Studies**

Courses formerly offered under the SP/ Speech prefix.

**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, and clarity of expression. Designed for non-transfer students.

**COMM-100A Basic Speech Communication: Principles**

**1 credit, Fall/Winter/Spring/Summer**

Explores elements of the communication process including major influences such as self-concept, perception, and culture. Examines verbal and non-verbal modes of communication. First unit of a three-credit series; may be taken in any order. Designed for non-transfer students.

**COMM-100B Basic Speech Communication: Interpersonal Relationships**

**1 credit, Fall/Winter/Spring/Summer**

Explores interpersonal skills in day-to-day formal and informal situations. Develops strategies for effective listening behavior. Examines for building and maintaining relationships. Second unit of a three-credit series; may be taken in any order. Designed for non-transfer students.

**COMM-100C Basic Speech Communication: Business Relationships**

**1 credit, Fall/Winter/Spring/Summer**

Explores small group dynamics and communication skills in day-to-day formal and informal situations. Examines leadership styles, conflict response, and effective interview techniques. Third unit of a three-credit series; may be taken in any order. Designed for non-transfer students.

**COMM-105 Listening**

**4 credits, not offered every term**

Course analyzes listening behavior. In addition, this course emphasizes developing an understanding and appreciation of listening as a vital element in the communication process. Course includes theory and individual skill development. Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**COMM-111 Public Speaking**

**4 credits, Fall/Winter/Spring/Summer**

Practice in organization, research and delivery of a variety of speeches. Prerequisites: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**COMM-112 Persuasive Speaking**

**4 credits, not offered every term**

Persuasive speaking, audience analysis, study of reasoning and the basic theories of persuasion. Prerequisites: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**COMM-129/COMM-229 Oral Interpretation**

**4 credits, not offered every year**

Oral interpretation of literature from the areas of prose, poetry and drama. Analyze specific literary works and communicate understanding through performance. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass COMM-111 or instructor consent.

**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.

**COMM-150/COMM-250 Competitive Platform Speaking**

**4 credits, not offered every year**

Advanced theory and practice in public speaking. Simulated public speaking situations, audience analysis, and rhetorical strategies will be emphasized. Students will prepare and present a variety of speeches. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass COMM-111 or instructor consent.

**COMM-167/COMM-267 Parliamentary Procedure**

**4 credits, not offered every year**

The principles and practice of parliamentary procedure to develop skills in conducting business during meetings. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Instructor consent.

**COMM-212 Mass Media & Society**

**4 credits, not offered every term**

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**COMM-218 Interpersonal Communication**

**4 credits, Winter/Spring**

The interpersonal communication process examined through lectures, reading, and exercises. Subjects include goal-setting, first impressions, conflict resolution, non-verbal messages, image building and assertiveness. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**COMM-219 Small Group Communication**

**4 credits, not offered every term**

Theories and practices of small group communication through group discussion, reading and written exercises. Emphasis on effective group communication, leadership skills, and problem-solving in small groups. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 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. Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**COMM-280 Speech/CWE****2-6 credits, Fall/Winter/Spring**

Cooperative work experience. Provides students with on-the-job work experience in the field of communications. Required: Instructor consent & a CWE seminar.

**CS****Computer Science****CS-090 Computers for New Users****2 credits, Fall/Winter/Spring/Summer**

Course in computers for those with very little or no computer experience. It covers the basic use of computers running the Microsoft Windows 7 operating system.

**CS-091 Computers for New Users II****2 credits, Fall/Winter/Spring/Summer**

Continued development of skills learned in CS-090. Topics include learning intermediate features of the Microsoft Windows 7 operating systems, more work with file management, and more work with applications such as word processing using the latest version of Microsoft Word, spreadsheets using the latest version of Microsoft Excel, and presentations using the latest version of Microsoft PowerPoint. Takes place in the computer lab, one student to a computer. Prerequisite: Pass CS-090 or placement in CS-091.

**CS-092S Computers for New Users, Spanish****3 credits, not offered every term**

Este es un curso en español, para aquellas personas sin experiencia alguna en computación. Incluye el uso del ratón, la administración de archivos, introducción a Windows, la creación de documentos, utilizando el programa Microsoft Office Word, cómo enviar y recibir e-mail, y cómo navegar en el Internet. Taught in Spanish; this course requires no computer experience. Includes using a keyboard and mouse, introduces Windows, file management, using Office applications, e-mail, and the Internet. Takes place in the computer lab, one student per computer.

**CS-093S Computers for New Users II, Spanish****3 credits, not offered every term**

Clase en español para aquellas personas que ya tomaron la clase CS-092S o equivalente. Usted estará disponible para crear, modificar, dar formato e imprimir una hoja de cálculo sencilla utilizando el programa Microsoft Excel. Además, usted creará presentaciones en PowerPoint utilizando diferentes herramientas de diseño, incluyendo audio y video. Por último, usted aprenderá a diseñar diferentes tipos de publicaciones utilizando el programa Microsoft Publisher. For those who have taken CS-092S or equivalent. Create, modify, format, and print simple worksheets in Microsoft Excel. In addition, you will create presentations in PowerPoint using different design tools including audio and video. Finally, you will be creating simple publications in Microsoft Publisher. Prerequisite: Pass CS-092S.

**CS-094S Database & Web Design, Spanish****3 credits, not offered every term**

Este es un curso interactivo que introduce los conceptos generales de base de datos utilizando el programa de Microsoft Access. Además, esta clase introduce conocimientos básicos necesarios para comenzar con el diseño de páginas Web. El curso incluye la creación, actualización y mantenimiento de sitios en la red internacional de datos (Internet) o en una red interna (Intranet) usando el programa Adobe Dreamweaver. This interactive class introduces basic concepts about a relational database using Microsoft Access. In addition, this course includes basic elements of beginning web page design to create, update and maintain web pages in Internet or intranet web sites using Adobe Dreamweaver. Prerequisite: Pass CS-093S or equivalent class.

**CS-120 Survey of Computing****4 credits, Fall/Winter/Spring/Summer**

Computer competency course to familiarize students with computer concept, software applications and living online. Introduces students to computer concepts, including, but not limited to the Windows environment, Microsoft Office Applications, and the Internet. Prerequisites: Pass CS-090 or placement in CS-120; pass WR-095 or placement in WR-121.

**CS-121 Computer Applications****3 credits, not offered every year**

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-125P Computer Publishing**  
3 credits, not offered every year

Desktop publishing using Microsoft Publisher: modifying and publishing professional documents. Presentation software using Microsoft PowerPoint: creating, modifying, and publishing slide shows.

**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, exception handling. Prerequisites: Pass CS-125H or equivalent experience. Recommended: pass MTH-060 or placement in MTH-065.

**CS-133VA Visual Basic for Applications**  
3 credits, Spring

Using Visual Basic for Applications to develop advanced macros and application features for Microsoft Office (Word, Excel, Access, and PowerPoint.) Topics will cover VB editor, objects, properties, variables, repeating statements, debugging codes, and integrating applications. Prerequisite: Pass BA-131.

**CS-133VB Visual Basic.NET I**  
3 credits, Fall/Spring

Hands-on approach to software design using object-oriented programming. Planning an application, building a user interface, using variables and constants, calculating, accumulating, counting, making decisions, using functions, and using menus. Prerequisites: Pass BA-131 or CS-120. Recommended: Pass MTH-060 or placement in MTH-065.

**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 and CS-120. Recommended: Pass MTH-060 or placement in MTH-065.

**CS-135I Advanced Web Design with Dreamweaver**  
3 credits, Fall/Spring

Plan and publish standards-based, accessible web sites 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. CS-135I emphasizes professional design techniques. Prerequisite: Pass CS-125H.

**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

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.

**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 WR-095 or placement in WR-121.

**CS-150 Computer Technician Orientation**  
3 credits, Fall/Spring

Course 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 and certifications in Computer Science and Information Technology are also covered. Prerequisites: Pass CS-120 or placement in CS-121; pass WR-095 or placement in WR-121. Recommended: pass MTH-060 or placement in MTH-065.

**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.

**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.

**CS-179 Networking I**  
3 credits, Winter

An 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-195 Flash Web Development**  
3 credits, Winter

Introduces the technologies 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.

**CS-225 Computer End User Support**  
3 credits, Fall

Addresses professional and interpersonal skills needed by computer technicians who support and manage hardware and software information systems. Customer service, troubleshooting, help desk operation; customer needs analysis; technical documentation and training skills. Prerequisites: Pass CS-120 or placement in CS-121 or equivalent experience.

**CS-227 Computer Hardware & Repair I**  
4 credits, Fall

An in-depth course in computer science 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 on the CompTIA A+ certification exam. Prerequisite: Pass CS-140 or instructor consent.

**CS-228 Computer Hardware & Repair II**  
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-228, covers the topics on the CompTIA A+ certification exam. Prerequisite: Pass CS-227 or instructor consent.

**CS-229 Networking II**  
4 credits, Spring

Course practices the building and servicing of basic computer networks. Topics include physical media, network design, addressing, routing, switching, and management used in common. This course, in conjunction with CS-179, covers the topics on the CompTIA Network+ exam. Prerequisites: Pass CS-179 and CS-228.

**CS-233S Web Application Development II**

3 credits, not offered every year

Exploration of server-side programming emphasizing database-driven web site design. Uses ASP.NET to revisit general object-oriented programming constructs, create database connectivity and highly interactive web sites. XML concepts and database techniques are discussed. Prerequisites: Pass CS-133S; or pass CS-125H and CS-133VB; or pass CS-125H and CS-161.

**CS-233VB Visual Basic.NET II**  
3 credits, not offered every year

Continuation of CS-133VB. Creating object-oriented programs. List boxes, combo boxes, printing, saving data and objects in files, arrays, accessing database files. Prerequisite: Pass CS-133VB.

**CS-234A AJAX Web Development**  
3 credits, Spring

In-depth exploration of creating dynamic websites using Asynchronous JavaScript and XML (AJAX) technologies. Course covers the Document Object Model (DOM), basic operation of an AJAX application, XML and JSON data formats, and working with common toolkits and APIs, including JQuery and the Google API. Prerequisite: Pass CS-133S or previous HTML and programming experience.

**CS-234P PHP/MySQL Web Development**

3 credits, Spring

Use PHP and MySQL to develop dynamic web sites for use on the Internet. Develop web sites ranging from simple online information forms to complex online applications. Introduce programming fundamentals including variables, control structures, functions and objects. Applications developed use MySQL as the backend database and will explore database connectivity, querying, and security. Prerequisite: Pass CS-125H or equivalent experience. 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.

**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.

**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.

**CS-245 Project Management— Information Systems**  
4 credits, not offered every term

Study practical approaches for managing, planning, organizing and implementing information systems projects using modern management techniques. Complete hands-on projects requiring management of project resources, scope, timeline costs, scheduling, human and other resources. Use Microsoft Project and other project monitoring tools. Project management is a broad term that can include many areas of business. Recommended: CS-133VB, BA-120, and BT-177.

**CS-260 Data Structures**  
4 credits, Spring

Continuation of CS-162. Includes linear, linked lists, trees, abstract data types, searching and sorting algorithms, and their analysis. Prerequisite: Pass CS-162.

**CS-275 Database Design**  
3 credits, Winter

Focuses on design of a relational database management systems (RDMS). Topics will include database development using the a) requirement, b) design, c) implementation model, database theory from flat table design to relational systems, entity-relationship models, one-to-one, one-to-many, and many-to-many relationships, referential integrity, normalization of tables, database programming and querying with SQL, and database security. Although other platforms may be demonstrated, the majority of work will be done with MySQL Server. Prerequisites: Pass CS-120 or placement above CS-120 or equivalent experience. Required: 4GB or larger USB hard drive.

**CS-276 Advanced SQL**  
4 credits, not offered every term

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

**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.

**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. Required: Instructor consent & a CWE seminar. Prerequisites: Pass BA-131, CS-140 and CS-150.

**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.

**CS-288W Windows Network Administration**  
4 credits, Winter

This course practices network administration and design using Windows Server and other operating systems. Topics include TCP/IP protocols and services such as v4 and IPv6 addressing, DHCP, DNS, routing, filtering, network protection, and remote access. Prerequisite: Pass CS-279W.

**CS-289 Web Server Administration**  
4 credits, Spring

An introduction to Apache and Microsoft Internet Information Server. Covers installation, administration, securing, and troubleshooting, as well as the http, https, and ftp protocols. Prerequisites: Pass CS-240L and CS-240W.

**CS-297N Network Capstone**  
4 credits, Spring

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.

**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-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 and sustain employment. Prepares students for career success. Corequisite for program specific CWE courses.

**CWE-282 Cooperative Work Experience Seminar II****0 credit, Fall/Winter/Spring/Summer**

The seminar provides an opportunity to develop the career management skills necessary to advance a career. Uses case studies and special projects. Prerequisite: CWE-281. Corequisite for program specific CWE courses.

**CWE-283 Cooperative Work Experience Seminar III****0 credit, Fall/Winter/Spring/Summer**

Advanced seminar that provides an opportunity to conduct an independent study of the career management skills necessary to develop advanced skills in obtaining, sustaining, and advancing employment. Prerequisite: CWE-282. Corequisite for program specific CWE courses.

**CWE-284 Cooperative Work Experience Seminar IV****0 credit, Fall/Winter/Spring/Summer**

Applicable in a limited number of programs. Corequisite for 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
Crime Analysis.....	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
Energy & Resource Management..	ERM-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.....	HOR-280/281/282
Horticulture/Urban Agriculture Farm	
Experience.....	HOR-284
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
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

**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****3 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. Includes practical instruction in radiation health and safety, types of film and holders, darkroom processing, film mounting, use of x-ray equipment, infection control techniques, disposal of hazardous waste, and exposure techniques on x-ray manikins. Required: Instructor consent.

**DA-102 Dental Radiology II****1 credit, Winter**

Advanced principles of radiology techniques emphasizing extra-oral radiography, techniques for children, patients with special needs, occlusal examinations, identification of radiographic abnormalities, medical health history and infection control. DANB clinical proficiency criteria will be followed to prepare for Oregon Clinical Radiologic Proficiency Exam. Students meeting radiographic competency on x-ray manikin will begin preparation for radiologic proficiency exam. Required: Instructor consent. Prerequisite: Pass DA-101 with a C or better.

**DA-104 Clinical Procedures I****3 credits, Fall**

Introduction and practice of basic chair-side assisting and general procedures which are taught in a dental lab setting. OSHA and Hazard Communication guidelines are practiced. Includes lectures and discussion of the dental professional, dental law, ethics, HIPAA, and patient records. Measuring and recording of vital signs are also covered. Required: Instructor consent.

**DA-105 Clinical Procedures II**  
3 credits, Winter

Further knowledge of chair side skills. Covers expanded function procedures. Introduces patient health education, oral hygiene instruction, fluoride treatment and plaque-related diseases, sealants, and coronal polishing. Required: Instructor consent. Prerequisite: Pass DA-104 with a C or better.

**DA-106 Clinical Procedures III**  
2 credits, Spring

Introduction to basic procedures, tray set-up, and dental materials of dental specialties: pedodontic, orthodontic, periodontics, oral surgery, and endodontics. Continue to perfect EFDA skills. Preclinical instruction in amalgam and composite polishing will be taught. Required: Instructor consent. Prerequisite: Pass DA-105 with a C or better.

**DA-107 Dental Materials I**  
3 credits, Fall

Introduction to physical and chemical properties of dental restorative materials and dental cements. Includes manipulation, storage and disposal of hazardous dental materials and dental cements. Amalgam and composite procedures are taught and practiced in a laboratory setting. Required: Instructor consent.

**DA-108 Dental Materials II**  
2 credits, Winter

Introduction to properties, uses and manipulation of impression materials, gypsum products. Includes instrumentation and procedures for fixed and removable prosthodontics, and polishing of removable appliances. Fabrication of custom trays, bleaching trays, and provisional restoration will also be covered. Required: Instructor consent. Prerequisite: Pass DA-107 with a C or better.

**DA-110 Clinical Practicum I**  
1 credit, Fall

Clinical practicum begins in the seventh week of first term. Apply basic dental assisting procedures taught in weeks one through six. All 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. Participate in two seminars held during the term. Required: Instructor consent.

**DA-115 Dental Science**  
1 credit, Fall

Introduction to anatomy and physiology including major body systems, head and neck anatomy, oral embryology and histology, tooth morphology, oral pathology, and dental charting. Required: 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 EFDA skills. Implement infection control protocols. Introduce basic business office procedures. Ten hours of community service will be required. Participate in three seminars during the term: orientation seminar, mid-term seminar, and concluding seminar. May not be challenged. Required: Instructor consent. Prerequisite: Pass DA 110 with a C or better.

**DA-125 Dental Infection Control**  
1 credit, Fall

Introduction to microbiology, infection control, cross-contamination, instrument processing, methods of sterilization, and instrument storage. Covers OSHA standards of Hazard Communication and Bloodborne Pathogens. Implement management of Material Safety Data Sheets and labeling of hazardous materials. Required: Instructor consent.

**DA-130 Clinical Practicum III**  
8 credits, Spring

Supervised unpaid practice and improvement of advanced clinical skills in all areas of chair side dental assisting, laboratory procedures, specialties, radiology and EFDA procedures. A minimum of forty-four hours performing business office procedures will be required. Responsible to meet ten hours of community service. Participate in three seminars during the term: orientation seminar, mid-term seminar, and concluding seminar. Required: Instructor consent. Prerequisite: Pass DA-120 with a C or better.

**DA-135 Pharmacology/Medical Emergencies**  
1 credit, Winter

Introduction to pharmacology, uses, types, purpose, and composition of drugs used in dentistry. Medical emergency signs/symptoms, vital signs, emergency equipment, and protocol will also be covered. Required: Instructor consent.

**DA-145 Dental Office Procedures**  
2 credits, Spring

A specialized study of dental business office procedures associated with desk and dental office management responsibilities. Includes employment strategies. Required: Instructor consent. Prerequisite: Pass CS-120 with a C or better.

**DMC****Digital Multimedia Communications****DMC-100 Introduction to Media Arts**  
3 credit, Fall/Winter/Spring

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, DMC-104.

**DMC-107 Animation & Motion Graphics II****3 credits, Winter**

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. Prerequisite: ART-106/DMC-106. Recommended: ART-221, ART-225, ART-226, DMC-104.

**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. Prerequisite: ART-107/DMC-107. Recommended: ART-221, ART-225, ART-226, DMC-104.

**DMC-146 Entertainment Law & New Media****3 credits, not offered every term**

The basic elements of copyright law and licensing as it applies to artists, songwriters, composers, filmmakers, and New Media Artists. How to protect your intellectual property and benefit from your rights as a copyright owner.

**DMC-147 Music, Sound & Moviemaking****1 credit, Fall/Winter/Spring**

Presents the basic components of designing, shooting, recording, editing, and scoring movies as well as the history and theory that has led to the current moment of film production.

**DMC-180 Digital Multimedia Communications Internship****1-12 credits, Fall/Winter/Spring**

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. Required: Instructor consent & a CWE seminar.

**DMC-190 Digital Multimedia 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 Multimedia Communications Portfolio Project II****3 credits, not offered every term**

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.

**DMC-192 Digital Multimedia Communications Portfolio Project III****4 credits, not offered every term**

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.

**DMC-194 Introduction to Film****4 credits, not offered every term**

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**DMC-195 American Film****4 credits, not offered every term**

The history and theory of American filmmaking from 1895 to the present. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**DMC-205 Directing for Film & Video****4 credits, Winter**

Offers students interested in filmmaking the skills needed to successfully direct performances specifically for the screen. Lab component included. Prerequisite: Pass WR-121 or instructors consent.

**DMC-222 Advanced 2D Animation: Design & Techniques****3 credits, not offered every 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 term**

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 RD-090 or placement in RD-115; pass WR-095 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, not offered every term**

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 Music, Sound, & Moviemaking****3 credits, not offered every term**

Introduction to music and sound as related to moviemaking. Students will have the opportunity to create and assemble music and sound for video into a finished product. Explores the basic components of music and sound as they relate to commercial film/video production.

**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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121 or instructor consent.

**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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass DMC-264 or instructor consent.

**DMC-280 Digital Multimedia 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. Required: Instructor consent & a CWE seminar.

**DMC-295 Revolutionary Film****4 credits, not offered every term**

Focuses on revolutionary styles of filmmaking from around the world that continue to have an effect on how movies are made today. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**EC*****Economics*****EC-200 Introduction to Economics****4 credits, not offered every term**

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 RD-090 or placement in RD-115.

**EC-201 Principles of Economics: MICRO****4 credits, Fall/Winter/Spring**

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. Recommended: Pass RD-090 or placement in RD-115; pass MTH-095 with a C or better or placement in MTH-105 or MTH-111.

**EC-202 Principles of Economics: MACRO****4 credits, Fall/Winter/Spring**

Introduction to economic theory, policy, and institutions. Focuses on macroeconomic theory, scarcity, production, money, unemployment, inflation, and international finance. Recommended: Pass RD-090 or placement in RD-115; pass MTH-095 with a C or better or placement in MTH-105 or MTH-111.

**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**

Designed to help students explore in depth observation of and to learn various child guidance techniques for children PK-4th grade. Students will be provided with techniques to assist them in the ongoing guidance challenges that arise every day in their classrooms. Included are the issues of family values and how they impact one's beliefs as it relates to discipline and guidance resolutions (with emphasis on a strengths-based system).

**ECE-130 Introduction to Child Development Associate****1 credit, not offered every term**

Designed to provide students with an overview of the requirements involved in obtaining a CDA (Child Development Associate) national credential, the purpose of which is to enhance the quality of early childhood care and education by defining, evaluating and recognizing the competence of child care practitioners in home or school-based settings.

**ECE-131 Physical Activity/Movement in ECE Programs****1 credit, not offered every term**

Designed to help students explore the various ways that physical development and movement can be integrated in the “whole” curriculum. The purpose of the course is to guide early childhood educators to incorporate daily developmentally appropriate activity experience into this curriculum, which could have the potential to shape the lives of children in becoming physically active and healthy for life.

**ECE-132 Positive Child Guidance in ECE****1 credit, not offered every term**

Designed to help students focus on discipline training techniques, with an emphasis on helping children think for themselves, while becoming more responsible and respectful. Participants receive assistance in understanding the goals behind misbehavior in children and attaining feelings of accomplishment in their work with children.

**ECE-133 Infant-Toddler Development****1 credit, not offered every term**

Designed to help students understand the early stages of growth, including early brain development. Topics covered are the development of a warm, welcoming environment, daily routines and activities, responding to challenging behaviors and building the important relationship with families.

**ECE-134 Health & Safety Issues in ECE****1 credit, not offered every term**

Designed to help participants promote children's physical and socio-emotional development by preventing health problems, responding to sick children and encouraging young children to develop good nutrition and other health and safety habits. Recognizing and reporting child abuse and neglect is included.

**ECE-135 Self-Esteem in the ECE Classroom****1 credit, not offered every term**

Covers the feelings of love, self-worth, trust, competency, and even power that begins to form long before the child has the capacity to express them in words. This course assists participants in understanding the importance of facilitating children's feelings of self-esteem, while focusing on the nurturing needs of the children.

**ECE-136 Observing & Recording Children's Behavior****1 credit, not offered every term**

Designed to assist early childhood care and education practitioners in constantly observing children. They will practice making objective, factual observations of children, which will then be used for assessment and planning purposes.

**ECE-137 Developing the Classroom Environment****1 credit, not offered every term**

Assists participants in organizing both the indoor and outdoor environments to encourage play and exploration. Topics include: arrangement equipment; planning and implementing a schedule that responds to the changing needs of children. This will include selecting materials that demonstrate respect for individual children's sex, family, language and cultural group.

**ECE-138 Family-School Relationships****1 credit, not offered every term**

Helps participants establish positive associations with families, including building trusting and supportive relationships. Children thrive when family members and program staff collaborate in the process of educating and caring for young children. Course work includes strategies for communicating with parents and creating an environment that welcomes families.

**ECE-139 Program Management in ECE****1 credit, not offered every term**

Assists participants in planning and evaluating their program's specific goals (short and long term) for working with children and their families. Participants will share resources and have the opportunity to discuss weekly planning forms, how to individualize/adapt forms for children with special needs, etc.

**ECE-140 Preschool Development****1 credit, not offered every term**

Helps participants explore how to develop “richer” learning environments, so there are more concrete opportunities for children to expand their learning during the preschool years. Included are all the developmental domains: physical, socio-emotional, cognitive and language/literacy.

**ECE-141 Outdoors & Children's Learning****1 credit, not offered every term**

Participants will develop ways to incorporate children's growth and learning in whatever outdoor environment is accessible, by integrating all curriculum areas: dramatic play, music and movement, art, science, math, etc.

**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-173 Preschoolers & Loss: Divorce and Death****1 credit, Fall**

Designed to help participants explore the profound effects that loss from divorce or death can have on young children. The effects of such loss are examined, including common developmental outcomes: social, emotional, cognitive, and physical. Strategies for supporting children and their families through such difficult times of separation are researched.



**ECE-177 Maximizing the Outdoors in ECE Curriculum**  
3 credits, Spring

Students will learn how to plan, create, and implement effective outdoor learning experiences. Students will explore the benefits of using the outdoors to build a child's interest in the environment and expand understanding of the world. Students will design an outdoor learning space, create a portfolio of fieldtrip destinations, and develop activities that enhance a child's development in the four domains while fostering divergent thinking and creativity. Prerequisite: Pass ECE-240 or instructor consent.

**ECE-179 The Professional in Early Childhood Education & Family Studies**  
2 credit, 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 in the Oregon Registry.

**ECE-209 Theory & Practicum**  
3 credits, Winter

Develops leadership potential through classroom discussion/field experience at the CCC on-site child care center. Students will gain experience and become oriented to various roles and responsibilities of the early childhood care and education practitioner; work with young children in an organized setting; assist with supervision of observation/assessment and guidance techniques.

**ECE-221 Observation & Guidance II in ECE Settings**  
4 credits, Fall

Designed to help students explore in greater depth the observation of PK-4th grade within the classroom environment. In this more advanced course, the student focuses on 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: ECE-121.

**ECE-235 Nutrition, Music & Movement**  
3 credits, Fall

Provides the knowledge and skills to work effectively with children and their families to help combat the prevalence of childhood obesity, which plays a major role in how they grow, develop and learn. Participants will explore various ways of integrating nutritional health-related activities into the daily routine. Special emphasis will be placed on the inclusion of music and movement, which will connect to the total curriculum in developmentally appropriate ways. The development needs of individual children will be taken into consideration, along with the cultural context.

**ECE-239 Helping Children & Families Cope with Stress**  
3 credits, Spring

Explore stressors in society that can affect children and families; the effects of stress on children and families and ways to help them cope.

**ECE-240 Lesson & Curriculum Planning**  
3 credits, Winter

Plan daily/weekly activities for early childhood care and education programs. Includes methodologies and materials to be used in planning programs which encompass the whole child's creative learning needs: emotional, social, cognitive, and physical.

**ECE-280 Early Childhood Education/ CWE**  
3 credits, Spring

Cooperative work experience. Provides students with on-the-job experience in the field of early childhood education. Gain experience in various roles and responsibilities of early childhood educator/caregiver while working with young children in an organized setting, observation/assessment and curriculum development. Required: Instructor consent. Corequisite: CWE-281.

**ECE-289 The Project Approach in Early Childhood Education**  
1 credit, Winter

Designed to help participants explore in depth The Project Approach methodology. They will become familiar with the steps involved in setting up this integrated approach to learning within their own classroom, while acquiring knowledge on how this study method supports young children's development in all domains: social, emotional, cognitive, physical, and language-literacy.

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**ED**

**Education**

**ED-100 Introduction to Education**  
3 credits, Fall/Spring

Examines teaching as a profession. Provides opportunities for direct experience with, and analysis of, educational settings. Explores current issues in education and characteristics of effective schools.

**ED-113 Instructional Strategies in Reading and Language Arts**  
3 credits, Fall

Introduces skills and techniques applied in supplemental reading instruction with elementary age students. Includes reading for meaning using the four cueing systems: comprehension, strategies, developing sight/meaning, vocabulary, connecting reading/writing, understanding appropriate uses of graphophonics.

**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. Students learn to link math and science instruction and assessment to state content standards.

**ED-130 Comprehensive Classroom Management****3 credits, Spring**

Provides current theory and methodology for managing small and large groups of students so that students choose to be productively involved in instructional activities. Covers the four major factors or skill areas of effective classroom management: 1) understanding students' personal/psychological and learning needs, 2) establishing positive adult-student and student-student relationships, 3) implementing instructional methods that facilitate optimal learning, and 4) using organizational and group management methods that maximize positive student behavior and learning.

**ED-131 Instructional Strategies****3 credits, Fall**

Focuses on the components of effective instruction. Students will design standards-based activities that integrate multiple content areas, address the instructional needs of diverse learners and include appropriate strategies for assessment.

**ED-150 Creative Activities for Children****3 credits, Fall**

Focus is on understanding and implementing developmental approach to creative activities for young children; involves hands-on experience with a variety of mediums including art, music, movement, and creative dramatics.

**ED-169 Overview of Students with Special Needs****3 credits, Winter**

An introduction to the disabling conditions of students with special needs and their implications in school settings. Defines and identifies intervention strategies for disabilities covered under federal law.

**ED-200 Foundations of Education****3 credits, Winter**

Provides an overview of the American Educational System, including historical, legal and philosophical foundations. Students will explore the governance of local schools and districts and will consider the roles and ethical obligations of professional educators.

**ED-229 Learning and Development****3 credits, Winter**

Addresses theory regarding human development, intelligence, motivation, and the learning process. Students learn to apply strategies and techniques derived from these theories.

**ED-235 Educational Technology****3 credits, Summer**

Trains students in the preparation and use of media and technology in school settings. Students will develop an understanding of the role of media in learning and methods for incorporating media in instruction.

**ED-246 School, Family and Community Relations****4 credits, Spring**

This course provides the knowledge and skills to work effectively with families and community professionals in early childhood education (Pre-K - 4th grade). Emphasis is on building and maintaining positive relationships to foster cooperation and mutual respect between early childhood professionals and the families of the children with whom they are working.

**ED-254 Instructional Strategies for English Language Learners****3 credits, Spring**

Examines pedagogical and cultural approaches which lead to successful acquisition of English language skills and content knowledge.

**ED-258 Multicultural Education****3 credits, Spring**

Covers the philosophy, activities, and techniques appropriate to a culturally sensitive classroom. Students will develop an understanding of the impact of culture on individual perception and learning and group dynamics.

**ED-270 Practicum I/CWE****4 credits, Fall**

Focuses on field experience in a variety of classroom activities directly related to assisting and supervising children in school settings. Allows students to apply knowledge, methods, and skills gained from education courses. The seminar covers classroom experience, problem-solving techniques, and materials. Required: Instructor consent. Prerequisites: ECE-280 or ED-280.

**ED-271 Practicum II/CWE****4 credits, Winter**

Focuses on field experience for students in a variety of classroom activities paralleling duties regularly assigned to educators supervising children in school settings. This course allows students to apply knowledge, methods, and skills gained from education courses. The seminar covers classroom experience, best practices and assessment techniques. Required: Instructor consent. Prerequisite: ED-270.

**ED-272 Practicum III/CWE****4 credits, Spring**

Focuses on field experience for students in a variety of classroom activities, paralleling duties regularly assigned to educators supervising children in school settings. This course allows students to apply knowledge, methods, and skills gained from education course. The seminar covers continuing observation/assessment, assisting the teacher in implementing an integrated approach to curriculum with attention paid to special needs children. Required: Instructor consent. Prerequisite: ED-271.

**ED-280 Practicum/CWE****2-6 credits, Fall/Winter/Spring**

Supervised practicum in a school setting. Students will utilize and develop knowledge, skills and attitudes relevant to working in a school and with children. Required: Instructor consent and successful completion of or current enrollment in ED-100.

**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 basic understanding, operation and set-up of 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 principals of the device operation. Industry standard devices will be used. Prerequisite: EET-137.

### **EET-137 Electrical Fundamentals I** 4 credits, Fall

Introduction to basic concepts of voltage, current, resistance and their relationships in DC circuits. Analysis of series, parallel and series-parallel circuits will be made using Ohm's and Kirchhoff's laws and DC Network theorems. 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 any application. Focuses on the overall philosophy and strategy of troubleshooting, as opposed to detailed tactics of specific applications. Recommended: Completion of MFG-109 or MFG-209.

### **EET-141 Electrical Fundamentals II** 4 credits, Winter

Introduction to basic concepts of source conversion and current sources. Network theorems, inductors, capacitors, magnetics, and transient analysis of RC and RL circuits will also be covered. Prerequisite: EET-137.

### **EET-142 Electrical Fundamentals III** 4 credits, Spring

AC circuits analysis, peak, average, RMS, and peak-to-peak voltages in relation to AC circuits. Power, energy, frequency, and transformers are covered. Prerequisite: EET-141.

### **EET-157 Digital Logic I** 3 credits, Winter

Introduction to digital logic principles, numbering systems and 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 and power transformers are explored. Covers motion control systems, basic relay circuits and sensors, stepper and servo motors and power transmission systems. Introductory mechanics area also covered, including simple machines and an introduction to static and dynamic forces. Required: Current enrollment in or successful completion of EET-137 or MFG-130.

### **EET-227 Semiconductor Circuits II** 3 credits, Fall

Second in series concentrating on the application, design and circuit analysis of transistor amplifying and switching circuits. Industry standard devices will be used. Prerequisite: EET-127.

### **EET-230 Lasers and Fiber Optics** 3 credits, Spring

This course focuses on basic theory and practice of laser and fiber optics. Students study optical fiber, optical components, testing and instrumentation, optical networks, etc. as well as general characteristics of lasers, laser excitation, semiconductor lasers, etc.

### **EET-239 Principles of Troubleshooting II** 2 credits, Fall

Covers advanced applications of diagnosis, service, 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. Recommended: Completion of EET-127.

### **EET-252 Control Systems** 3 credits, Winter

Covers basic control system and subsystems used in the electronics industry including programmable controllers, sensors, transducers, motion and motor control systems. Recommended: Completion of EET-157 and EET-127.

### **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; Recommended: Completion of EET-257.

### **EET-257 Digital Logic II** 4 credits, Spring

Bus systems and computer peripherals and systems using latches, registers, counters, and memory circuits are developed and analyzed. Prerequisite: EET-157.

**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 online course components such as Moodle are addressed. Prerequisites: Placement in RD-080.

**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/note-taking, testing skills/anxiety, library resources, learning styles, study/reading textbooks, concentration. Prerequisite: Placement in RD-090.

**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 Basic Part I**  
5 credits, Fall/Winter/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. Required: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121, pass MTH-060 with a C or better or placement in MTH-065. Prerequisite: AHA CPR Healthcare Provider or equivalent.

**EMT-102 EMT Basic Part II**  
5 credits, 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/Spring

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, Spring

Covers principles of communication via verbal, written and electronic modes in the provision of EMS. Documentation of the elements of patient assessment, patient care and transport, communication systems, radio types, reports, codes and correct techniques. Required credits for the CCC one-year EMT certificate program and for students transferring to two-year AAS-EMT program. Prerequisite: Pass EMT-101.

**ENG****English****ENG-104 Introduction to Literature: Fiction**  
4 credits, Fall/Summer

An introduction to American and international short stories, with a focus on the fundamental elements of fiction. Also examines the historical, social, and cultural background and significance of fiction. Students engage in literary analysis, use literary terminology, and develop personal and scholarly responses to fiction. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-106 Introduction to Literature: Poetry****4 credits, Spring/Summer**

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-107 World Literature****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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-108 World Literature****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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-109 World Literature****4 credits, Spring**

Readings from the late eighteenth century "Romantic" period through modern times, ranging from Russia to Nigeria and 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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-121 Mystery Fiction****4 credits, Fall**

Mystery novels and short stories by such writers as Poe, Doyle, Christie, Sayers, Chandler, and Grafton. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-130 Leadership in Literature****4 credits, not offered every year**

Examines the nature of leadership by analyzing characters who are leaders in major literary works. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-194 Introduction to Film****4 credits, not offered every year**

Viewing, discussion, and analysis of films from a variety of eras and cultures. Students will learn to analyze a film beyond its surface meaning, drawing on film aesthetics, technology, history, and theory. The interpretive and critical thinking skills they develop can be applied to a variety of modern media. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-195 American Film****4 credits, not offered every term**

The history and theory of American filmmaking from 1895 to the present. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-201 Shakespeare****4 credits, Fall**

Selected comedies, histories, tragedies, romances, and poetry are covered. 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 RD-090 or placement in RD-115; pass WR-095 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. Works from the ENG-202 will not be repeated in CCC's other Shakespeare course, ENG-201. Study of significant plays and sonnets, covering a different selection of works than ENG-201. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-204 Survey of English Literature****4 credits, Winter**

From its beginnings through early eighteenth century. Representative readings from the Anglo-Saxon, Middle English, Renaissance, Earlier Seventeenth century, and Restoration periods. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-205 Survey of English Literature****4 credits, Spring**

Late eighteenth century through modern. Representative readings from the Romantic, Victorian and modern periods. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-213 U.S. Latino Literature****4 credits, Spring**

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-216 Comics and Literature****4 credits, not offered every term**

Examines the intrinsic literary and artistic qualities of the comics, as well as the literature and other art they have inspired. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-217 Games and Literature**  
4 credits, not offered every term

Explores games as important narrative forms with strong ties to the literary, social, and historical times in which they are created. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-225 Creative Nonfiction Literature**  
4 credits, not offered every year

Discussion and analysis of various types of creative nonfiction such as literary journalism, memoirs, nature or science writing, literary travel writing, and personal essays. Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**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 traditional and new technological approaches to creating digital documentaries and avant-garde film. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121; pass DMC-104 or previous experience with film studies and digital video.

**ENG-250 Greco-Roman Mythology**  
4 credits, Fall

Analysis of the themes and structures of the myths of the ancient Greek and Roman cultures; study of the influence on the cultures that followed. Insight into the social, psychological, and aesthetic nature of mythology. Introduction to theoretical approaches to myth interpretation. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-251 Celtic Mythology**  
4 credits, Winter

Analysis of the themes and structures of the myths of the ancient Irish and Welsh cultures. Study of the Celtic legacy. Insight into the social, psychological, and aesthetic nature of mythology. Introduction to theoretical approaches to myth interpretation. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-252 Hindu Mythology**  
4 credits, not offered every year

Analysis of the themes and structures of the myths of ancient India and their contribution to culture, history, and literature. Insight into the social, psychological, and aesthetic nature of mythology. Introduction to theoretical approaches to myth interpretation. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-253 American Literature**  
4 credits, Fall

Pre-colonial to nineteenth century. 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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-254 American Literature**  
4 credits, Winter

Mid-nineteenth century to twentieth century. 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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-255 American Literature**  
4 credits, not offered every year

Focus on selected authors and works of modern American fiction, poetry, nonfiction, and drama. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-261 Literature of Science Fiction**  
4 credits, not offered every year

Introduction to science fiction in literature and film, exploring historical and contemporary themes. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-266 The Literature of War**  
4 credits, not offered every year

Fiction, poetry, nonfiction, and popular song lyrics dealing with the experience of war. Crane, Remarque, Trumbo, Heller, Vonnegut, Owen, Sassoon, and writers of the Vietnam War will be examined and discussed. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**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. Required: Instructor consent & a CWE seminar.

**ENG-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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

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**ENGR**

**Engineering Sciences**

**ENGR-102 Engineering Computation**  
4 credits, Fall

Introduction to data structures for solving engineering problems. Continues developing skills in the algorithmic method for engineering problem solving. Prerequisite: Pass CS-120 or placement in CS-121. Pass MTH-111 or placement in MTH-112 or 4 years of high school math.

**ENGR-111 Introduction to Engineering**  
3 credits, not offered every term

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. Corequisites: MTH-112.

**ENGR-112 Engineering Programming**  
3 credits, not offered every term

Introduction to basic scientific and engineering computing using MATLAB. Rudiments and methods of engineering analysis, design, and problem solving with computational tools. Emphasis on developing proficiency in writing functions and programs. Corequisites: MTH-112.

**ENGR-115 Engineering Graphics**  
3 credits, not offered every year

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: ENGR-111.

**ENGR-211 Statics**  
4 credits, not offered every term

First term of engineering mechanics sequence. Force analysis in structures and machines under various loading conditions. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-252. Corequisite: PH-211.

**ENGR-212 Dynamics**  
4 credits, not offered every term

Kinematics, kinetics, work-energy, and impulse-momentum relationships of engineering systems. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass ENGR-211 and PH-211.

**ENGR-213 Strength of Materials**  
4 credits, not offered every term

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. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass ENGR-211.

**ENGR-221 Electrical Circuit Analysis**  
4 credits, not offered every term

Designed to give the student a thorough understanding of basic electrical circuit theory, this course covers voltage and current relationships and fundamental methods of circuit analysis. Electrical circuit parameters such as resistance, inductance, and capacitance will be examined through theory and laboratory experiments. Prerequisites: Pass MTH-252.

**ENGR-222 Electrical Circuit Analysis II**  
4 credits, not offered every term

Expands upon the techniques of circuit analysis begun in ENGR-221 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, and the use of Laplace transforms to analyze the transient and steady-state behavior for a number of signal types. Prerequisites: Pass ENGR-221.

**ENGR-223 Electrical Circuit Analysis III**  
4 credits, not offered every term

Final course in the electrical circuits sequence. The main emphasis of the course are frequency response of circuits, the design and analysis of filters, A/C steady state circuits with Laplace transform analysis, three-phase power, and two-port networks. The laboratory portion of the course will consist of one project involving significant design and analysis. Prerequisites: Pass ENGR-222.

**ENGR-226 Plane Surveying and Mapping**  
4 credits, not offered every term

An introduction to the concepts of plane surveying, including the use of tape, level, transit, electronic total station (ETS), and horizontal/vertical control networks. Covers network calculations and adjustments, angles and bearings, and topographic surveying and mapping. Prerequisites: Pass MTH-111.

**ENGR-231 Properties of Materials**  
4 credits, not offered every term

An introduction to materials science, a field that describes the behavior of materials by utilizing principles of chemistry and physics to engineer new materials and predict their resultant properties. The course will focus on describing the microscopic physical and chemical structure of materials and relating that structure to the macroscopic thermal, electrical, and mechanical properties. The course will also cover the connection between atomic/crystal structure and materials processing. Prerequisites: Pass CH-221.

**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, not offered every term

Part A of a two-part series. Present and practice adverb clauses, discourse connectors, reported speech, and noun clauses in written and spoken English. Required: Instructor consent. Corequisite: PIE-070.

**ENL-118 Advanced Grammar B**  
3 credits, not offered every term

Part B of a two-part series of classes. Present and practice count/noncount nouns, definite/indefinite articles, modals, and conditional sentences in written and spoken English. Required: Instructor consent. Corequisite: PIE-070.

**ENL-119 Advanced Reading/Writing**  
6 credits, not offered every term

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 to satisfy all requirements. Required: Instructor consent.

**ENL-120 Advanced Communication Skills**

3 credits, not offered every term

Develops 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 notetaking. Required: Instructor consent.

**ERM**

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.

**Energy & Utility Resource Management****ERM-100 Orientation to Energy & Resource Technology**

3 credits, Fall

Overview of the energy, utility, and resource industries' career options. Through research, students will discover and report on career options in the energy and utilities resource industries. Prerequisite: Pass ERM-121. Corequisites: ERM-107, ERM-108A and ERM-171. Required: Instructor consent.

**ERM-101 Energy & Resource Technology I: Introduction**

3 credits, Winter

Examine the history, development and segmentation of the energy industry in the Northwest. Research and report on the effects of regional energy policies and how they affect specific segments of the energy industry. Prerequisite: Pass ERM-100 with a C or better. Corequisite: ERM-102. Required: Instructor consent.

**ERM-102 Energy & Resource Technology II: Electricity**

3 credits, Winter

Focus on generation sources of electricity, transmission and final delivery to the consumer. Examine basic principles of alternating and direct current as it affects electrical flow. Research and report on strategies/components of the electrical industry. Prerequisite: Pass ERM-100 with a C or better. Corequisite: ERM-101. Required: Instructor consent.

**ERM-103 Energy & Resource Technology III: Generation**

3 credits, Spring

Examine various methods for generating electricity and power distribution throughout the Northwest. Coal, natural gas, nuclear, hydro, diesel powered plants, and the path to emerging technologies such as wind, solar, geothermal and wave energy resources. Prerequisite: Pass ERM-101 and ERM-102 with a C or better. Required: Instructor consent.

**ERM-107 Career Portfolio**

3 credits, Fall

Develop and customize a portfolio to record the application of knowledge and skills which may relate to energy and utility resource industries. Portfolio consists of resume, reference letters, work samples, narrative and certifications. Prerequisite: Pass ERM-121 or instructor consent. Corequisites: ERM-100, ERM-108A and ERM-171 or instructor consent.

**ERM-108A Career Industry Marketing Strategies**

2 credits, Fall

Complete your National Career Readiness Certificate (NCRC) as a job-marketing tool to demonstrate knowledge, skills in core areas that apply to energy and utility resource management. This course includes: computer literacy, math and logic. Explore various career options and pathways, and develop industry contacts. Practice interviewing skills and techniques. Prerequisite: Pass ERM-121. Corequisites: ERM-100, ERM-107, and ERM-171. Required: Instructor consent.

**ERM-121 Basic Electricity Fundamentals**

1 credit, Summer

Designed to help students develop an understanding of basic electricity and utility systems; from electromagnetism, generation, transmission, distribution and finally to its end use in homes and at work. It is for students with little or no previous knowledge of electricity. It covers basic electricity fundamentals in a fun non-technical way, incorporating group processes, hands-on activities, and problem-solving exercises, videos and slides. Prerequisite: Pass RD-090 with a C or better or placement in RD-115, pass MTH-020 with a C or better or placement in MTH-060, pass WR-090 with a C or better or placement in WR-095. Required: Instructor consent.

**ERM-171 Energy Industry Workplace Health Awareness**

3 credits, Fall

Discover principles and concepts that govern health related environmental conditions in a workplace setting in the utility industry. Create systems for change specific to health related workplace conditions. Prerequisite: ERM-121. Corequisites: ERM-100, ERM-107, and ERM-108A. Required: Instructor consent.

**ERM-172 Energy Industry Safety Development**

3 credits, Fall

Discover principles and concepts that govern safe work practices in the utility industry. Focus on safety awareness and development. Required: Valid Oregon Driver's License and satisfactory driving record to pass the CDL permit requirements of ODMV. Prerequisite: Pass ERM-171 with a C or better. Required: Instructor consent.

**ERM-173 Energy Industry Performance Development**

6 credits, Winter

Discover principles and concepts that govern performance development using safe work practices in the utility industry. Development of knowledge, skills and abilities to promote team efficiency. Prerequisite: Pass ERM-172 with a C or better. Corequisites: ERM-101 and ERM-102. Required: Instructor consent.



**ERM-174 Groundworker Training**  
3 credits, Spring

Prepares the student for basic Groundworker responsibilities. This course provides the training, field competency, and documentation to become qualified to assume duties of a bid Groundman. Prerequisite: Pass ERM-173 with a C or better. Required: Instructor consent.

**ERM-175 Initial Pole Climbing**  
4 credits, Spring

Focuses on safety, proper equipment and various job functions. The students will practice and perform pole top rescue, and test out doing different performances on the pole at four, ten, sixteen, twenty-five, and thirty-five feet. All climbing is done in full fall restraint at all times. Prerequisite: Pass ERM-174 with a C or better. Required: Instructor consent.

**ERM-180 Energy & Resource Management/CWE**  
3 credits, Spring

Cooperative work experience. Emphasis on work-based learning experience in the utility industry. Coordination of instruction and evaluation of student job performance will be provided by college faculty in conjunction with the student's employer/supervisor. Required: Instructor consent & CWE seminar, or the successful completion of a C or better in ERM-107 and ERM-108A.

**ERM-201 Energy Applications I: Renewable Energy Resources**  
4 credits, Fall

Access and interpret the current and potential applications of renewable energy resources throughout the energy and resource industries. This includes renewable energy impacts on generation, transmission, distribution, transportation, and end-use in buildings (homes, office and manufacturing process). The perspectives covered include energy policy (politics), economics (cost/benefit) and technology (physical potential/limits). Prerequisite: Pass ERM-103 with a C or better. Required: Instructor consent.

**ERM-202 Energy Applications II: Leadership**  
4 credits, Winter

Explore the concepts of leadership and management for energy industry segments of generation, transmission, and distribution operations. Develop an understanding of management and leadership strategies to expand application and resources to deal with the major issues facing energy and resource industries. Prerequisite: Pass ERM-201 with a C or better. Required: Instructor consent.

**ERM-203 Energy Applications III: Seminar**  
4 credits, Spring

Energy seminar: Each student will develop an individual course plan (approved by the instructor) to survey and do original research and interviews, and report on a selected current energy application. The report and verbal presentation is the capstone of knowledge and skills covered by the ERM series (100 through 200 levels) and will be communicated in a written report (peer reviewed), as well as a formal student presentation to a panel of industry and academic experts. Reports and presentations may define internship projects. Prerequisite: Pass ERM-202 with a C or better. 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/Summer

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/Summer  
DEQ authorized class. This class offers ways to reduce, identify, store, and dispose of hazardous waste in Oregon. Certificate 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-001 Planning for Your Future**  
0 credit, Fall/Winter/Spring/Summer

This course is designed for new students in the ESL program at CCC. Students receive information about their test results, classes offered, departmental and college policies, college services available, campus facilities, student responsibilities, and community resources. Required: Instructor consent.

**ESL-010 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. Sessions are held in various public places throughout Clackamas County, such as libraries, schools, churches, and the college campuses and outreach sites. Tutors help to set student goals and a plan of learning. Required: Instructor consent.

**ESL-012 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 language levels and class placement. Required: Instructor consent.

**ESL-014 Introduction to Business English A****0 credit, not offered every term**

This course is Part A of a two-part series of classes designed for non-native speakers of English who are considering employment and/or training in a business field. The course teaches students the basic communication skills frequently required in everyday business interactions both in the U.S. and internationally. Required: Instructor consent.

**ESL-015 Introduction to Business English B****0 credit, not offered every term**

Part B of a two-part series of classes designed for non-native speakers of English who are considering employment and/or training in a business field. The course teaches students the basic communication skills frequently required in everyday business interactions both in the U.S. and internationally. Required: Instructor consent.

**ESL-019 Educational Planning for Returning Students****0 credit, Fall/Winter/Spring/Summer**

For returning students in the ESL program at CCC. Students meet with their instructors to review progress, revisit 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-022 Beginning ESL****0 credit, Fall/Winter/Spring/Summer**

Introduces the language necessary to function in day-to-day American society at the beginning level; listening, speaking, reading, and writing are taught in the contexts of work, family, and community. Required: Instructor consent.

**ESL-033 Intermediate Conversation****0 credit, Fall/Winter/Spring/Summer**

Intermediate-level students study and practice speaking and listening to improve their fluency in English for living and working situations. Required: Instructor consent.

**ESL-034 Upper Intermediate Conversation****0 credit, not offered every term**

For upper-intermediate non-native speakers of English who want to study and practice speaking and listening to improve their fluency in English for living and working situations. Emphasis will be on developing conversational skills as needed for meeting personal, educational, family, and workplace goals. Required: Instructor consent.

**ESL-035 Advanced Communication Skills****0 credit, not offered every term**

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.

**ESL-040 Beginning Grammar****0 credit, Fall/Winter/Spring/Summer**

Presentation and practice present simple tense of the verb "to be," nouns, descriptive/possessive adjectives, prepositions of place and time, and simple sentence structures in written and spoken English. Required: Instructor consent.

**ESL-041 Upper Beginning Grammar****0 credit, Fall/Winter/Spring/Summer**

Class will present and practice the present simple, past simple, and present continuous tenses, adverbs of frequency, articles, and nouns in written and spoken English. Required: Instructor consent.

**ESL-042 Intermediate Grammar A****0 credit, not offered every term**

Part A of a two-part series. Present and practice the formation and use of the simple present and present progressive with a focus on non-action verbs and extended time, past simple, past progressive, used to, the future, and wh-questions in written and spoken English. Required: Instructor consent.

**ESL-043 Intermediate Grammar B****0 credit, not offered every term**

Part B of a two-part series. Present and practice present perfect 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-044 Upper Intermediate Grammar A****0 credit, not offered every term**

Part A of a two-part series of classes designed to help upper-intermediate ESL students gain knowledge and proficiency in the use of verb forms that frequently occur together, gerunds, infinitives, and causative verbs. Required: Instructor consent.

**ESL-045 Upper Intermediate Grammar B****0 credit, not offered every term**

Part B of a two-part series. Presentation and practice of adjective clauses, phrasal verbs, and passive voice in written and spoken English. Required: Instructor consent.

**ESL-046 Advanced Grammar A****0 credit, not offered every term**

Part A of a two-part series. Present and practice adverb clauses, discourse connectors, reported speech, and noun clauses in written and spoken English. Required: Instructor consent.

**ESL-047 Advanced Grammar B****0 credit, not offered every term**

Part B of a two-part series. Present and practice count/non-count nouns, definite/indefinite articles, modals, and conditional sentences in written and spoken English. Required: Instructor consent.

**ESL-049 Beginning Reading and Writing****0 credit, Fall/Winter/Spring/Summer**

Designed to teach beginning-level students who have limited knowledge of written English. Students will practice alphabet recognition, read and write short sentences, study new vocabulary, read short paragraphs, and gain reading and scanning skills to use in everyday life and in the workplace. Required: Instructor consent.

**ESL-050 Upper Beginning Reading and Writing****0 credit, Fall/Winter/Spring/Summer**

For upper-beginning level ESL students who read and write at the sentence level. Students read short texts in order to improve reading skills, write a variety of sentences and put related sentences in paragraph form. Required: Instructor consent.

**ESL-051 Upper Beginning Reading****0 credit, not offered every term**

For upper-beginning level ESL students who read at the sentence level. Students read short texts in order to improve reading skills. Required: Instructor consent.

**ESL-052 Upper Beginning Writing****0 credit, not offered every term**

Designed for upper-beginning level ESL students who write at the sentence level. Students will write a variety of sentences and put related sentences in paragraph form. Required: Instructor consent.

**ESL-053 Intermediate Reading/Writing****0 credit, Fall/Winter/Spring/Summer**

Designed for the intermediate-level ESL student who is ready to begin writing at the paragraph level. The major purpose of the course is to improve the student's reading and writing skills as needed for more advanced ESL and college courses, in the workplace, and in everyday life. Required: Instructor consent.

**ESL-054 Upper Intermediate Reading/Writing****0 credit, Fall/Winter/Spring/Summer**

Upper-intermediate students will practice reading and writing skills needed to succeed in college, the workplace, and everyday life. Introduction to multiple paragraph essays. Required: Instructor consent.

**ESL-055 Advanced Reading/Writing****0 credit, not offered every term**

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.

**ESL-056 Intermediate Reading****0 credit, not offered every term**

For intermediate-level ESL students who read at the paragraph level. Introduction to strategies for improving reading skills as needed for more advanced ESL and college courses, in the workplace, and in everyday life. Required: Instructor consent.

**ESL-057 Intermediate Writing****0 credit, not offered every term**

For intermediate-level ESL students who are ready to begin writing at the paragraph level. Strategies for improving writing skills as needed for more advanced ESL and college courses, in the workplace, and in everyday life. Required: Instructor consent.

**ESL-058 Upper Intermediate Reading****0 credit, not offered every term**

For upper-intermediate level ESL students who read beyond the paragraph level. Development of the reading skills needed to succeed in college and in everyday life. Required: Instructor consent.

**ESL-059 Upper Intermediate Writing****0 credit, not offered every term**

For the upper-intermediate level ESL student to develop the writing skills needed to succeed in college and in everyday life. Introduction to multiple paragraph essays. Required: Instructor consent.

**ESL-060 Pronunciation A****0 credit, not offered every term**

For intermediate or higher-level ESL students who want to sound more natural when speaking English. Focuses on increasing awareness of the sounds of American English, improving intelligibility, and producing speech more fluently. Required: Instructor consent.

**ESL-061 Pronunciation B****0 credit, not offered every term**

For ESL students at the intermediate-level or higher who want to sound more natural when speaking English. Activities will focus on increasing student awareness of the sounds of American English, improving intelligibility, and producing speech more fluently. Required: Instructor consent.

**ESL-063 Idioms & Conversation A****0 credit, not offered every term**

Part A of a two-part series of classes that introduces common American idioms while practicing conversation skills at the upper-intermediate level. Required: Instructor consent.

**ESL-064 Idioms & Conversation B****0 credit, not offered every term**

Part B of a two-part series of classes that introduces common American idioms while practicing conversation skills at the upper-intermediate level. Required: Instructor consent.

**ESL-067 Video and Conversation****0 credit, not offered every year**

Intensifies intermediate/advanced ESL language skills in listening/speaking. Students view Crossroads Café video series, complete workbook exercises, practice listening for specific information, participate in pair, small group, and whole class discussions and activities. Required: Instructor consent.

**ESL-070 Computer Lab****0 credit, Fall/Winter/Spring/Summer**

Provides opportunities to improve English language skills by using language learning software and Internet websites. Required: Instructor consent.

**ESL-071 ESL Skills Lab****0 credit, Fall/Winter/Spring/Summer**

Students improve their language skills using language learning software on the computer. Required: Instructor consent.

**ESL-073 Writing Skills****0 credit, not offered every year**

For ESL students who want to improve writing skills for everyday life, the workplace and college courses. Students work individually with instructor guidance. Required: Instructor consent.

**ESL-074 Differentiated Writing Instruction****0 credit, not offered every term**

Designed for ESL students who want to improve their writing skills for everyday life, the workplace and college courses. Students work individually with instructor guidance. Required: Instructor consent.

**ESL-075 ESL Study Skills**

0 credit, not offered every term

Students work independently to improve their English language skills as they complete assignments or projects from other classes. Required: Instructor consent.

**ESL-076 Multi-Level ESL**

0 credit, not offered every term

Introduces the language necessary to function in day-to-day American society at multiple levels. Speaking, listening, grammar, reading, and writing are taught in the contexts of work, family, and community. Instruction will be tailored to individual students' skill levels in the different skill areas addressed. Required: Instructor consent.

**ESL-082 Spelling**

0 credit, not offered every term

Presents and provides opportunities to practice English spelling patterns and rules. Individualized instruction to address spelling challenges. Required: Instructor consent.

**ESL-083 Vocabulary Building A**

0 credit, not offered every term

Part A of a two-part series of classes in which upper-intermediate and advanced level students will develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and from the Academic Word List, and will develop their vocabulary acquisition skills. Required: Instructor consent.

**ESL-084 Vocabulary Building B**

0 credit, not offered every year

Part B of a two-part series of classes in which upper-intermediate and advanced level students will develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and from the Academic Word List, and will develop their vocabulary acquisition skills. Required: Instructor consent.

**ESL-085 Editing A**

0 credit, not offered every term

Upper-intermediate and higher-level ESL students will improve their writing through editing. Required: Instructor consent.

**ESL-086 Editing B**

0 credit, not offered every term

Upper-intermediate and higher-level ESL students will improve their writing through editing. Required: Instructor consent.

**ESL-087 Editing for Better Writing**

0 credit, Fall/Winter/Spring/Summer

Upper-intermediate and higher-level ESL students will improve their writing through editing. They will also engage in extended reading which will provide a context for writing. Required: Instructor consent.

**ESR*****Environmental Science*****ESR-171 Environmental Science**

4 credits, Fall

A lab science course introducing 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 with a C or better or placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ESR-172 Environmental Science**

4 credits, Winter

A lab science course introducing the planning of parks preserves, the scientific method, environmental toxicology, energy principles, fossil fuel recovery and use, renewable energy sources, nuclear energy, water management, water pollution, climate change and air pollution. Recommended: Pass MTH-060 with a C or better or placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**ESR-173 Environmental Science**

4 credits, Spring

A lab science course introducing indoor air pollution, the scientific method, ozone depletion, minerals and the environment, environmental economics, urban environments, waste management, biological diversity, biogeography and exotic species, ecological succession and restoration, and environmental sustainability. Recommended: Pass MTH-060 with a C or better or placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 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

Develop entry level skills in a specific occupation and practice the career management skills necessary to obtain, sustain, and advance employment. A comprehensive employment plan is developed with a focus on a career path.

**FN*****Food & Nutrition*****FN-110 Personal Nutrition**

3 credits, Fall/Winter/Spring/Summer

How nutrition affects health and fitness for the individual and the family. Analysis of present diet and methods to improve food preparation and habits. Basic nutrition course for student with little or no science background.

**FN-225 Nutrition**

4 credits, Fall/Winter/Spring/Summer

The role of nutrients in the development and maintenance of a healthy body. Students utilize computer aided analysis of own diet for nutritional adequacy. Examines current nutrition controversies. Strong background in life sciences recommended.

**FR****French****FR-101 First-Year French I**  
4 credits, Fall

The first year of academic French is 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. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**FR-102 First-Year French II**  
4 credits, Winter

The first year of academic French is 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. Prerequisite: Pass FR-101 or instructor consent.

**FR-103 First-Year French III**  
4 credits, Spring

The first year of academic French is 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. 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. Required: Current enrollment in or successful completion of FR-201 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

A basic introduction to Oregon forest land management functions, tools and processes related to forest stewardship. Students will gain knowledge of current forest management activities and practices, as well as current forest policy and harvest laws.

**FRP-102 Basic Forest Management Lab**  
1 credit, not offered every term

Provides through lab exercises in a forest setting experience in using forest management field equipment discussed in FRP-101; includes 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; and use of fixed plot and variable plot forest sampling methods to gather data necessary to calculate stocking, volume and growth. Corequisite: FRP-101.

**FRP-107 Wildland Fire Career Portfolio**  
3 credits, not offered every term

Create a job-marketing tool that integrates knowledge and skills related to the wildland fire industry. Portfolio consists of resume, reference letters, work samples and other content to be updated according to need and opportunity. Meets the cooperative work experience seminar requirement.

**FRP-110 Basic Wildland Fire Investigation (FI-110)**

1 credit, not offered every term

NWCG FI-110 certified. Wildland Fire Observations and Origin Scene Protection for First Responders. Introductory course for personnel first arriving at a wildland fire scene on the basics of wildland fire cause determination.

**FRP-130 Introduction to Wildland Firefighting (S-130/S-190)**

3 credits, Fall/Winter/Spring

NWCG S-130 and S-190 certified. Introduces students to wildland fire behavior and the skills necessary to fight wildland fires under close supervision. No firefighting experience required.

**FRP-131 Advanced Firefighter Training (S-131)**

1 credit, not offered every term

NWCG S-131 and S-133 certified. For firefighters who wish to become qualified in the first level of supervision, Advanced Firefighter/Squad Boss, being a first responder to initial fire attack. As a portion of this course, S-133 (Look Up, Look Down, Look All Around) material is covered. Prerequisite: Pass FRP-130 (S-130).

**FRP-180 Wildland Fire/CWE**

3 or 6 credits

Fall/Winter/Spring/Summer

Work-based learning experience in a wildland firefighting capacity meeting requirements as set forth in the wildland firefighting task book. Prerequisite: Pass FRP-130. Required: Current enrollment in or successful completion of FRP-107; Instructor consent.

**FRP-200 Basic Incident Command System (I-200)**

1 credit, not offered every term

NWCG I-200 certified. Introduces the student to principles associated with the Incident Command System (ICS) covering organization, facilities, resource terminology and common responsibilities associated with incident assignments.

**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; forest ecosystem management principles and activities; wildlife, watershed and recreation values and conflicts; and compare forest management on federal, state and private lands. Prerequisites: FRP-101, FRP-102.

**FRP-205 Forest Management Assessments & Inventories**

3 credits, not offered every term

Provide forest technicians, seasonal wildland firefighters and other natural resource seasonal employees to, understanding of, and the ability to conduct various forest management and recreation management assessments and inventories that are routinely done to gather data for making decisions; providing training in these areas that would broaden employment opportunities for seasonal employees during periods of low fire activity or during the off season periods of the year. Prerequisites: FRP-101, FRP-102. Recommended: FRP-201.

**FRP-211 Portable Pumps and Water Use (S-211)**

1 credit, not offered every term

NWCG S-211 certified. Practical use and maintenance of portable pumps and accessories used in wildland fire suppression.

**FRP-211 Portable Pumps and Water Use (S-211)**

1 credit, not offered every term

NWCG S-211 certified. Practical use and maintenance of portable pumps and accessories used in wildland fire suppression.

**FRP-212 Wildfire Power Saws (S-212)**

2 credits, not offered every term

NWCG S-212 certified. Learn techniques and mechanics of power saws that meet the functional requirements of a power saw operator on a wildland fire incident.

**FRP-215 Fire Operations in the Urban Interface (S-215)**

3 credits, not offered every term

NWCG S-215 certified. Meets the training needs for initial attack incident commanders and company officers confronting wildland fires that threaten life, property and improvements.

**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-217 Interagency Helicopter Training (S-271)**

3 credits, not offered every term

NWCG S-271 certified. Provides basic knowledge and skills required by individuals working with helicopters relative to fire and non-fire: safety, protective equipment, load calculations, landing areas, fueling, Helibase and Helispot operations.

**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)**

2 credits, not offered every term

NWCG S-230 certified. Meets the training needs of a single resource boss on a wildland fire incident. Prerequisite: Qualify as FFT1.

**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. Prerequisites: Pass FRP-230 (S-230).

**FRP-239 Division/Group Supervisor (S-339)**

2 credits, not offered every term

NWCG S-339 certified. Skills and knowledge required to perform the tasks of a Division or Group Supervisor as identified in the position task book, PMS 311-09. Prerequisite: Pass FRP-259 (S-330) or be a task force/strike team leader.

**FRP-243 Survivor I: Maps, Compass, GPS**

2 credits, Fall/Winter/Spring

Use maps, compass, grid locations, land descriptions, topography, distance, directions, and Global Positioning Systems (GPS).

**FRP-244 Survivor II: Wilderness**

2 credits, Fall/Winter/Spring

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, Fall/Winter/Spring

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 animals' and insects' 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

NWCG L-280 certified. Develop an awareness of the human factors on the fire line, self-assess skills and abilities, and practice problem solving events in small teams. Prerequisite: Pass FRP-130 (S-130).

**FRP-259 Task Force/Strike Team Leader (S-330)**

2 credits, not offered every term

NWCG S-330 certified. Learn to recognize, plan and implement appropriate tactics in various incident situations with various resources and identify hazards and risks and mitigate them. Prerequisite: Pass FRP-230 (S-230).

**FRP-260 Interagency Incident Management (S-260)**

1 credit, not offered every term

NWCG S-260 certified. Provides the prerequisite knowledge and skills to perform the tasks of the positions in the Incident Command System (ICS) for which NWCG S-260 is required. Prerequisite: FF1 status.

**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-280 Wildland Fire/Advanced CWE**

3 or 6 credits

Fall/Winter/Spring/Summer

Work-based learning experience in a wildland firefighting capacity meeting requirements as set forth in the wildland firefighting task book. Prerequisites: Pass FRP-180 and FRP-131. Required: Instructor consent.

**FRP-290 Intermediate Wildland Fire Behavior (S-290)**

3 credits, not offered every term

NWCG S-290 certified. Study of weather and environmental factors and how these factors affect wildland fires. Prerequisite: Pass FRP-130 (S-130/S-190).

**FRP-294 Intermediate Incident Command System (I-300)**

2 credits, not offered every term

NWCG I-300 certified. This course provides description and detail of the Incident Command System (ICS) organization in supervisory roles on expanding or Type 3 incidents. NIMS compliant.

**FRP-295 Advanced ICS: ICS for Command and General Staff & Complex Incidents (I-400)**

2 credits, not offered every term

NWCG I-400 certified. Directs the student towards an operational understanding of large single-agency and complex multi-agency/multi-jurisdictional responses. Prerequisite: Pass FRP-294 (I-300).

**FRP-296 Introduction to Wildland Fire Behavior Calculations (S-390)**

3 credits, not offered every term

NWCG S-390 certified. Introduces fire behavior calculations by manual methods, using nomograms and the Fire Behavior Handbook Appendix B. Prerequisite: Pass FRP-290 (S-290).

**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. Introduction to minerals, ores, and basic types of rocks. Recommended: Pass RD-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 explored include rivers, mass wasting, glaciers, groundwater, deserts and beaches. Labs focus on various map types, using maps to understand geologic features and local geology. Recommended: Pass RD-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 RD-090 or placement in RD-115.

**G-145 Geology of Pacific Northwest**  
4 credits, not offered every term

A lab course that explores the scenic geology of Northwest landscapes, historic development and current problems in environmental geology. Introduction to rock types, geologic processes, and hazards of the Northwest from the Blue Mountains to the coast. 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. Introduction to environmental geology. Recommended: Pass RD-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 explored include beaches, rivers, mass wasting, glaciers, groundwater, deserts and beaches. Topographic/geologic maps are used to understand geologic features and local geology. Recommended: Pass RD-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 RD-090 or placement in RD-115; pass MTH-065 or placement in MTH-095.

**G-280 Geology/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job work experience in the field of geology. Required: Instructor consent & a CWE seminar.

**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

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 RD-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 RD-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 RD-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 RD-090 or placement in RD-115.



**GEO-130 Introduction to Environmental Geography**  
4 credits, not offered every term

Explores 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 RD-090 or placement in RD-115.

**GEO-208 Geography of the U.S. & Canada**  
4 credits, not offered every year

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 RD-090 or placement in RD-115.

**GEO-230 World Regions & Landscapes**  
4 credits, not offered every term

Provides students with the fundamental geographical knowledge of world countries and their path towards development. Presents the similarities and differences in the spatial pattern of culture, economics, politics, and the natural environment of the world's regions. Recommended: Pass RD-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. Required: Instructor consent & a CWE seminar.

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**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 RD-090 or placement in RD-115, pass WR-095 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 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 2nd 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 2nd 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 2nd year course. Prerequisite: Pass GER-202 or instructor consent.

**GER-211 Intermediate German Conversation**  
3 credits, not offered every year

Development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary German-language media, presentations, games and interviews of classmates. Major topics and level of conversational difficulty will parallel GER-201. Prerequisite: Pass GER-103 with a C or better or instructor consent.

**GER-212 Intermediate German Conversation**  
3 credits, not offered every year

Development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary German-language media, presentations, games and interviews of classmates. Major topics and level of conversational difficulty will parallel GER-202. Prerequisite: Pass GER-103 with a C or better or instructor consent.

**GER-213 Intermediate German Conversation**  
3 credits, not offered every year

Development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary German-language media, presentations, games and interviews of classmates. Major topics and level of conversational difficulty will parallel GER-203. Prerequisite: Pass GER-103 with a C or better 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

Provides key GIS concepts, methodologies, and techniques. Emphasis is on developing an understanding of GIS applications, technical GIS concepts, terminology, methodology and problem solving techniques.

### **GIS-232 Data Collection & Application** 3 credits, Spring

Introduction to data collection techniques using global positioning systems, PDAs, and related software. Emphasis on different ways to create data through existing surveys, compilation of data from many sources and merging data from differing sources, etc. Prerequisite: GIS-201.

### **GIS-236 Visual Basic Programming for GIS** 1 credit, Fall

An introduction to Object Oriented Programming and Visual Basic for Application (VBA) programming for ArcGIS. Basics of VBA and ArcObjects are explained so students can create VBA macros to customize the ArcGIS environment. Prerequisite: MFG-109 or equivalent computer competency.

### **GIS-237 Advanced Visual Basic Programming for GIS** 1 credit, Winter

Advanced training in Object Oriented 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.

### **GIS-255 Introduction to ArcGIS I** 1 credit, not offered every term

Covers fundamental GIS concepts as well as how to query a GIS database, manipulate tabular data, edit spatial and attribute data clearly and efficiently using maps and charts.

### **GIS-280 GIS/CWE** 2-6V 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. Required: Instructor consent and a CWE seminar.

### **GIS-281 ArcGIS I** 3 credits, not offered every term

Introduces the essential skills needed to navigate and operate ArcGIS at a basic level. Includes how to utilize GIS concepts, methods and techniques in conjunction with problem solving techniques to accomplish assigned real world examples. Prerequisite: GIS-201.

### **GIS-282 ArcGIS II** 3 credits, Spring

Introduction to the object-oriented data model. Working with geodatabases, datasets and feature classes. Additional topics include: establishing topological relationships, versioning, and analysis of geometric networks. Advanced surface and cell-based modeling will also be covered. Prerequisite: GIS-281.

### **GIS-286 Remote Sensing** 3 credits, Winter

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.

**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-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. Explores careers within the field.

### **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 a 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-assisted suicide.

### **GRN-184 Aging & the Individual** 3 credits, Winter

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, intelligence, wisdom and creativity.

### **GRN-280 Gerontology/CWE** 2-6 credits, Fall/Winter/Spring

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. Required: Instructor consent; current enrollment in or successful completion of HS-170. Corequisite: CWE-281.

**GS****General Science**

See also Arts and Sciences (ASC).

**GS-104 Earth System Science**  
4 credits, Fall

A lab course examining the physics and exploration methods that help us understand our universe. Topics include plate tectonics, the earth's structure, earthquakes/hazards, mineral chemistry, igneous rocks, 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/surfaces, 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 chemistry/physics of the hydrosphere and atmosphere. Includes atmospheric processes, the carbon cycle, desert formation 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 RD-090 or placement in RD-115; pass WR-095 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 credit.

**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 per term of volunteer work and participate in seminars. Required: Instructor consent.

**HD-120 College Success**  
1 credit, Fall/Winter/Spring/Summer

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, life-long learning, emotional intelligence, critical thinking, time management, effective study skills/habits/planning, and the use of on- and off-campus resources.

**HD-140 Career Exploration**  
3 credits, Fall/Winter/Spring

Students use information about themselves (values, interests, personality and skills) and information about the world of work (career and industries) to explore and make long term career decisions.

**HD-141 Career Advancement**  
1-3 credits, not offered every term

Students gather and use information about their current skills, employer, and industry to create career advancement opportunities, identify strategies that increase employment stability, and examine issues that impact successful career pathways.

**HD-144 Assertive Communication**  
1 credit, not offered every term

Provides basic communication skills 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, not offered every term

Identifies specific personal stressors and focus on developing skills that enable students to deal more effectively with stress.

**HD-146 Values Clarification**  
1 credit, not offered every term

Helps students examine beliefs, attitudes, and values behind decisions and actions. The student will examine whether behavior matches stated beliefs, evaluate the consequences of choices, and focus on clarifying a personal value system.

**HD-147 Decision Making**  
1 credit, Fall/Winter/Spring/Summer

Develop and improve your process for making satisfying choices. The basics of decision making and processes for making personal, social, and work choices are included. Use this class for your current decision needs.

**HD-153 Managing Conflict in Your Life**  
1 credit, not offered every term

Introduction to managing conflict in a positive way. Examine personal beliefs about conflict and become more effective in solving problems.

**HD-154 Building Self-Confidence**  
1 credit, not offered every term

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, not offered every term

Provides students the opportunity to study their procrastination habits and time management patterns. Course focuses on components of time organization, choices re: procrastination, and methods to improve overall use of time.

**HD-158 Managing Change**

1 credit, not offered every term

This 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, not offered every term

Introduction to the complexities of multicultural issues and how they influence one another in everyday life.

**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-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. This course is part of Life & Career Options. Corequisite: HD-208.

**HD-208 Career & Life Planning**

3 credits, Fall/Winter/Spring

Helps re-entry adults identify interests, abilities, values and transferable skills and apply this information to goal setting and career decisions. Students identify and explore options for training, education, and employment. Covers job search skills such as interviewing, resume writing, and developing a career portfolio. Each student develops an action plan identifying goals and next steps. This course is part of Life & Career Options. Corequisite: HD-202.

**HD-209 Job Search Skills**

1-3 credits, not offered every term

Use a job search plan to conduct labor market research, develop job search networking relationships, and to prepare and present applications, cover letters, resumés, interviews, and thank you notes.

**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. Required: Instructor consent and a CWE seminar.

**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-130 Introduction to Family Development**

1 credit, not offered every term

Designed to introduce front-line family workers and family development workers, who work in various community based child and family support agencies, to the concept of a strength-based approach to family development. Participants will acquire knowledge related to family development theory and have the opportunity to apply that knowledge to assist and support the family unit across the life span.

**HDF-131 Communication in Family Development**

1 credit, not offered every term

Designed to assist participants in strengthening their already present communication skills: spoken and written (expressive), and listening and reading (receptive), and to acquire new skills to become proficient family development communicators. Particular emphasis will be placed on the understanding and use of nonverbal body language (tone, gestures, facial expressions, etc.), understanding the role of empathy in communication, promoting cooperative solutions and working with language barriers or low levels of literacy.

**HDF-132 Self-Care Family Development Workers**

1 credit, not offered every term

Designed to assist participants in developing or clarifying their own personal vision for their work, as it relates to family development. Topics covered include: balancing work and family life, completing a Family Assessment and stress reduction and wellness issues.

**HDF-133 Diversity in Family Development**

1 credit, not offered every term

Designed to assist participants in explaining how "culture" is defined in the field of family development (diversity and oppression) and realizing why cultural competence is an important skill in this field. Other topics include barriers related to cultural competence and their impact, appreciating aspects of your own cultural identity and increasing one's sensitivity to other cultures.

**HDF-134 Strength-Based Assessment in Family Life Development**

1 credit, not offered every term

Designed to assist family development workers help families identify and build on their strengths to achieve healthy self-reliance. Based on positive, mutually respectful relationships, workers communicate with families to help them recognize these strengths and the resources available to them. Participants will have the opportunity to review several strengths-based assessment tools.

**HDF-135 Setting & Achieving Goals in Family Development**

1 credit, not offered every term

Designed to provide family development workers with the skills needed to help families identify and set achievable goals, based on their own strengths. The importance of developing positive, mutually respectful relationships with families is emphasized - while techniques are offered to avoid families becoming dependent on the case worker.

**HDF-136 Community Resources in Family Development****1 credit, not offered every term**

Designed to provide family development workers with the information needed to assist families with identified special needs to access community resources. Such identified needs could include: specialized learning needs, family literacy issues, developmental delays, common mental help problems, issues related to domestic violence, alcohol and drug dependency, etc.

**HDF-137 Home Visiting in Family Development****1 credit, not offered every term**

Designed to provide family development workers with the skills necessary to conduct respectful home visits. Class discussions will include the role of the home visitor and the establishment of rapport with the families. Also covered are concerns for personal safety and other issues related to home visiting.

**HDF-138 Facilitation Skills in Family Development****1 credit, not offered every term**

Designed to provide family development workers with the facilitation skills necessary to conduct successful family meetings, support groups and community meetings. Class discussions will include the role of the family worker in helping families identify their informal support networks and the benefits to be gained from participating in support and advocacy groups.

**HDF-140 Contemporary American Families****3 credits, Spring**

Focuses on the diversity of the American family today, and a historical overview of changes in the family environment and structure. Become familiar with internal/external factors that influence families such as parenting, violence, gender, divorce, remarriage, economics, and culture.

**HDF-141 Parent-Child Relations: Context & History****3 credits, Winter**

Course covers history of child rearing in the U.S., child rearing patterns, parent-child relations at each developmental stage, special challenges faced by parents and children and child socialization strategies to help children become increasingly more competent.

**HDF-142 Parent-Child Relations II: Practical Parenting****4 credits, Winter/Spring**

This course is designed to assist students in the study of parent-child relations. This program is especially helpful for those who are in the child welfare or criminal justice system focusing on areas such as normative child development and parent/partner relationships. The participants will become familiar with the systemic family development model, which explains family functioning at different stages of child rearing as well as knowledge of brain development, raising an emotionally intelligent child, and temperament traits. This course uses a learner-centered design in which the instructor works with the learner to develop and attain goals throughout the course. It uses an outcomes-based model of instruction focusing on real-life adult roles of the pro-social parent and life-long learner. Recommended: Pass HDF-141.

**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, intellectual, emotional and social growth and development of young children.

**HDF-247 Preschool Child Development****3 credits, Winter**

Emphasis on principles of development in children 2 to 6 years, including physical, cognitive, social and emotional growth, observation and assessment.

**HDF-260 Understanding Child Abuse & Neglect****3 credits, Fall/Winter/Spring/Summer**

Overview of child abuse problems for students interested in child care education and/or human services. A look at causes of abuse, abused child, abusive parents, role of teachers, areas of treatment, education, resources that can assist children and parents.

**HDF-280 Child & Family Studies/CWE****2-6 credits, not offered every term**

Cooperative work experience. Provides students with on-the-job experience in the field of early childhood care and education and/or family studies. Gain practical knowledge of various roles and responsibilities, including those of early childhood care and education practitioners or as child and family support personnel in a variety of agencies. Required: Instructor consent and a CWE seminar.

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**HE/HPE****Health****HE-151 Body and Drugs I****3 credits, Fall/Winter/Spring**

The first of a two-course sequence, this course examines the history of the use of addictive drugs; addictive drug classifications; and the physiological impact of drugs on the body. This class will also review the stimulant group of drugs.

**HE-152 Body and Drugs II****3 credits, Winter/Spring**

The second of a two-course sequence, this course examines three drug categories (depressants, hallucinogens, and the "other" drugs): their history, and their physiological and psychological impact. Prerequisite: Complete HE-151.

**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, Winter/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-249 Mental Health**  
3 credits, Fall/Winter/Spring

Examines factors which influence emotional and mental well-being. Emphasis on handling day-to-day situations in a positive, healthful manner.

**HE-250 Personal Health**  
3 credits, Fall/Winter/Spring

Explores the interaction of health and the quality of life. Includes emotional behavior, drugs, disease, nutrition, human sexuality, cardiovascular functioning, and medical care.

**HE-252 First Aid/CPR**  
3 credits, Fall/Winter/Spring

Immediate and temporary care for 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 alcohol as a drug, problem drinking, alcohol use and its effect on family, social and economic well-being, and the rehabilitation process.

**HE-280 Health/CWE**  
2-6 credits, Fall/Winter/Spring

Cooperative work experience. Off-site work experience in a health-related occupation. Required: Instructor consent & a CWE Seminar.

**HPE-295 Health & Fitness for Life**  
3 credits, Fall/Winter/Spring

Explores interaction of physical fitness and health. Meets three hours a week for personal fitness assessment and two hours of classroom sessions. Related topics include: nutrition, stress reduction, relaxation techniques, goal setting, and weight control.

**HIM**

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.

**Health Informatics****HIM-110 Health Information Technology I**

4 credits, not offered every term

Introduces the concept of health information management and health informatics including the components of content, use the structure of healthcare data along with information keeping practices in both paper and electronic systems. Prerequisite: Pass RD-080 or placement in RD-090, pass WR-095 or placement in WR-121, and placement in MTH-020. Corequisite: HIM-120.

**HIM-120 Health Information Technology 1 Lab**

1 credit, not offered every term

Lab course for the HIM-110 lecture course. Allows students to use the skills and knowledge learned in HIM-110. Corequisite: HIM-110.

**HIM-182 Healthcare Delivery Systems**  
3 credits, not offered every term

Explains the past, present, and future influences on the delivery of healthcare. Covers provider organizations and settings in health care, financing of healthcare, causes and characteristics of healthcare utilization in the United States, regulation and monitoring of healthcare systems and ethical issues associated with healthcare technology.

**HIM-271 Quality Improvement in Health Care**

3 credits, not offered every term

Covers medical staff organization, physician credentialing, and quality improvement techniques in the healthcare setting. Corequisite: HIM-274.

**HIM-274 Quality Improvement in Healthcare Lab**

1 credit, not offered every term

Lab course for HIM-271. Corequisite: HIM-274.

**HIM-281 Data Management & Analysis 1**

3 credits, not offered every term

Collection, retrieval, analysis, and quality review of administrative and clinical information and data. Corequisite: HIM-286.

**HIM-283 Health Information Systems**  
4 credits, not offered every term

Introduces the history and current status of information systems in healthcare: information architectures, administrative and clinical applications, evidence-based medicine, information retrieval, decision support systems, security and confidentiality, bioinformatics, information system cycles, the electronic health record, key health information systems and standards, and medical devices. The course teaches strategies and tools to insure the development and/or selection of health information systems and discusses the role of healthcare information and communication technologies in healthcare delivery including their role in improving the quality, safety and efficiency of healthcare delivery.

**HIM-285 Health Care Financing & Compliance**

3 credits, not offered every term

Provides an understanding of the essential components of financing and compliance in health care facilities.

**HIM-286 Data Management & Analysis 1 Lab**

2 credits, not offered every term

Lab course for HIM-281. Allows students to practice skills and apply the knowledge learned in Data Management and Analysis 1. Corequisite: HIM-281.

**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/ Landscape/Urban Agriculture*

### **HOR-111 Horticulture Practicum/Fall** 6 credits, Fall

Practical horticulture practices which include seasonal activities covering container and field nurseries, greenhouse management, garden design, landscape installation and landscape management. Basic practices involved in planting, pruning, pest control, equipment operation, soil, water and fertilizer management. Industry field trips included. Projects parallel Horticulture classes for fall term. Class includes a lab component.

### **HOR-114 Garden Design** 1 credit, Winter or Spring

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-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 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

Harvest systems for food safety and food quality that result in profitable farm-to-table operations. Food handling and storage for sustainable urban agriculture operations will be covered. Class includes a lab component.

### **HOR-125 Food Production in the Willamette Valley** 3 credits, Fall

Exploration of historical, ethical, practical and scientific aspects of food production systems focusing on agricultural sustainability, including economic, social and environmental impacts of food and farming will be emphasized. Study of economical farming using systems thinking and critical thinking development will be utilized.

### **HOR-130 Plant Propagation Theory** 3 credits, Winter

Covers plant anatomy and reproduction techniques of plants from seed, cuttings, grafting, division, and micro-propagation. Offers an in-depth overview of propagation systems that may be selected.

### **HOR-131 Tree & Shrub Pruning/Winter** 3 credits, Winter

Emphasis on dormant pruning of fruiting and ornamental plants. Training in dormant pruning and training of grapes, fruit trees, deciduous, evergreens, ornamental trees and shrubs. Basic woody plant anatomy, growth, and development. Class includes a lab component.

### **HOR-132 Pesticide Selection & Use** 3 credits, Winter

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 Applicator exams.

### **HOR-133 Horticulture Practicum/Winter** 6 credits, Winter

Practical horticulture practices which include seasonal activities covering container and field nurseries, greenhouse crops, vegetable production, garden design, landscape installation and landscape management. Basic practices involved in propagation, transplanting, pruning, pest control, equipment operation, water and fertilizer management. Industry field trips included. Projects parallel Horticulture classes for winter term. Class includes a lab component.

### **HOR-134 Herb Growing & Gardening** 1 credit, Winter or Spring

Study of herb plant propagation and garden use. Garden culture and design are covered.

### **HOR-135 Propagation of Edible Plants** 3 credits, Winter

Survey and practice reproducing plants utilizing sexual and asexual propagation methods of organically produced food crops used for local production. Instruction will focus on desirable traits of specific varieties and crop replication methods for sustainable farm operations. Class includes a lab component.

### **HOR-136 Urban Agriculture Practicum/Winter** 6 credits, Winter

Essential horticulture practices which include seasonal activities covering farm crop lay-out, edible crop installation and management. Basic practices involved in propagation, transplanting, pruning, pest control, equipment operations, water and fertilizer management and farm field trips included. This class provides students with experience in several areas of urban agriculture. Approximately one class, each week, will be spent by students on assigned work in seasonal farm project area activities. Training will be provided for each task. This format has been selected to create a hands-on experience for each student. Class includes a lab component.

### **HOR-140 Soils & Fertilizers** 3 credits, Spring

Soil characteristics and management, including nutritional elements and the relationship between the soil and plant growth.

**HOR-141 Urban Agriculture Practicum/Spring**  
6 credits, Spring

Essential horticulture practices which include seasonal activities covering farm crop lay-out, edible crop installation and management. Basic practices involved in transplanting, pruning, pest control, equipment operations, water and fertilizer management. Farm field trips included. This course provides students with experience in several areas of Urban Agriculture. Approximately one class, each week, will be spent by students on assigned work in seasonal farm activities. Class lecture and class field trips are an essential component of this course. This format has been selected to create a hands-on experience for each student. 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**  
6 credits, Spring

Practical horticulture practices which include seasonal activities covering container and field nurseries, greenhouse crops, vegetable production, garden design, landscape installation and landscape management. Basic practices involved in transplanting, pruning, pest control, equipment operation, turf, soil, water and fertilizer management. Industry field trips included. Projects parallel Horticulture classes for spring term. 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**  
3 credits, Spring

Installation and maintenance of turf grasses commonly used in landscape construction. Emphasizes select cultural practices, irrigation, weed and pest identification and control. Class includes a lab component.

**HOR-146 Fruit and Berry Growing**  
3 credits, Summer

Regionally appropriate fruit and berry production practices suitable for urban marketing will be explored. Class will utilize the Home Orchard demonstration fruit growing site on campus. Class includes a lab component.

**HOR-147 Marketing Water Efficient Landscaping**  
1 credit, Spring

Exploring the principles of water conservation in the landscape and how to be more profitable by selling water conservation practices to residential and commercial end users.

**HOR-148 Farm Equipment**  
3 credits, Spring

Identification and utilization of small-farm diverse crop production tools, which enhance development of high quality crops and efficiently use available labor and capital resources without resulting in adverse environmental impacts. Effects of soil tillage equipment use on the soil ecosystem, including intended and unintended effects will be studied. Class includes a lab component.

**HOR-180 Career Development Internship**  
1 credit, Summer

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**  
3 credits, Fall

Learn to identify and grow seasonal plants 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 florists. Class includes a lab component.

**HOR-213 Computer-Aided Landscape Design**  
3 credits, Spring

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.

**HOR-215 Herbaceous Perennials**  
3 credits, Summer

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**  
2 credits, Winter

The development of an Integrated Pest Management (IPM) plan for landscape, nursery, greenhouse or agricultural industries. Plan incorporates pest detection, control practices and evaluates effectiveness. Recertification credits may be granted by the Oregon Department of Agriculture toward pesticide license renewal.

**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, and other computer programs for record keeping and management for growers and landscape businesses. Prerequisite: Pass CS-091 or placement in CS-120.



**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 Principles of Arboriculture**  
3 credits, Winter

Management of trees in landscape, including residential, commercial, and urban settings, following course materials prepared by the International Society of Arboriculture. Students study the value of trees, including ways that trees enhance the physical, aesthetic, economic, and psychological experiences of people. Preparation for the ISA Certified Arborist Exam.

**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 broadleaved evergreens, shrubs, and groundcovers, including their cultural requirements in the landscape. Class includes 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 Basic Landscape Design**  
3 credits, Fall

Introduction to landscape planning, including basic drafting skills, grading, drainage, and site planning. Class includes a lab component.

**HOR-230 Equipment Operation & Maintenance**  
3 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

Design principles of irrigation and drainage systems for various situations, including underground and above-ground, residential and commercial systems. Class includes a lab component.

**HOR-232 Commercial Floral Design**  
3 credits, Winter

Present design techniques, used by florists today, to create naturalistic centerpieces, corsages, and gift arrangements using fresh flowers. Cut flower conditioning and handling, wedding and sympathy design, and sales strategies will also be covered.

**HOR-234 Intermediate Landscape Design**  
3 credits, Winter

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.

**HOR-235 Weed Identification**  
2 credits, Fall

Identification and life cycles of weeds commonly found in landscapes and nurseries. Recertification credits may be granted by the Oregon Department of Agriculture toward pesticide license renewal.

**HOR-236 Insect Identification**  
2 credits, Fall

Identification and life cycles of insects which damage ornamental plants in greenhouses, landscapes, and nurseries. Recertification credits may be granted by the Oregon Department of Agriculture toward pesticide license renewal.

**HOR-237 Disease Identification**  
2 credits, Winter

Identification of ornamental plant diseases which occur in greenhouses, landscapes, and nurseries. Recertification credits may be granted by the Oregon Department of Agriculture toward pesticide license renewal.

**HOR-239 Tree Climber Training**  
2 credits, Summer

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 systems in landscape areas. Emphasis on home lawns, gardens, and larger areas, including drainage methods for improved performances. Class includes a lab component.

**HOR-241 Nursery Management**  
3 credits, Fall

Essentials of nursery practices, including containers and field growing practices, crop scheduling, management, and marketing.

**HOR-242 Plant Propagation/Spring**  
3 credits, Spring

Proper techniques for reproducing plants from seed, cuttings, division, and micro-propagation. Emphasis on seasonal plant production. Class includes a lab component.

**HOR-244 Environmental Landscape Design**  
3 credits, Spring

Design of landscapes to develop ecosystems using plants and other landscape amenities to encourage wildlife and generate low maintenance habitat. Includes the proper uses of landscape features that build wildlife habitats and the study of various water environments.

**HOR-246 Organic Farming and Gardening**  
3 credits, Spring

History, fundamental principles and practices of organic farming and gardening as applied to the maritime Pacific Northwest. Class includes a lab component.

**HOR-247 Hardscape Installation**  
3 credits, Spring

Materials and construction methods used in landscape hardscape development with emphasis placed on design, materials selection, construction and maintenance of hardscape features for walls, patios, lighting, fencing, decks, and water features. Class includes a lab component.

**HOR-248 Flower Arrangers Garden/Spring**  
3 credits, Spring

Learn to identify and grow seasonal plants 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 florists. Class includes a lab component.

**HOR-250 Western Herbs**  
2 credits, Fall

Introduces students to herbs that can be grown locally. Instruction will focus on the components and uses of herbs.

**HOR-251 Herbal Products**  
1 credit, Winter

Instruction will be provided in making herbal teas, skin salve, tincture, infused oil, vinegar and syrup. Covers what ingredients to use and why each is important.

**HOR-252 Kitchen Herbs**  
1 credit, Spring

Instruction will focus on how to use common herbs and spices as food and for craft. Practical instruction is provided to utilize herbs and spices.

**HOR-280 Horticulture/CWE**  
3 credits, Fall/Winter/Spring/Summer

On-the-job experience in the various segments of horticulture. Students enroll in co-op after completing nine credits of horticulture courses. May be repeated for up to 6 credits. Required: A CWE seminar.

**HOR-281 Horticulture/CWE**  
6 credits, Fall/Winter/Spring/Summer

On-the-job experience in the various segments of horticulture. Students enroll in co-op after completing nine credits of horticulture courses. Required: A CWE seminar.

**HOR-282 Horticulture/CWE**  
3 credits, Fall/Winter/Spring/Summer

On-the-job experience in the various segments of horticulture. Students enroll in co-op after completing nine credits of horticulture courses. May be repeated for up to 6 credits. Required: A CWE seminar.

**HOR-284 Urban Agriculture Farm Experience/CWE**  
6 credits, Summer

Centers on experimental learning as students work on the CCC campus farm using organic farming techniques which center on ecological and sustainable practices, through hands-on application of principles, practices, and management. Students will participate in marketing the harvest produced. Online study materials will supplement field studies. Students are allowed to enroll after completing nine credits of Urban Agriculture certificate classes. Required: A CWE seminar.

**HPD**

Courses with this prefix may 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****HPD-009 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-009 CPR-Renewal**  
0.4 CEU, not offered every year

American Heart Association (AHA) Healthcare Provider CPR class. For recertification of AHA Healthcare Provider (Level C) CPR card.

**HPD-009 EMT-Oregon Intermediate Bridge**

5.6 CEU, not offered every term

Required certification upgrade for Oregon EMT-Intermediates. Enhances knowledge of roles and responsibilities of the OREMT-I, emergency pharmacology, venous access and medication administration, ECG interpretation and dysrhythmia management.

**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

Student will examine interpersonal skills, personal values, decisions and problems for human service trainees. Addresses stresses, demands, and rewards of working in this field. Required for Human Services Generalist degree.

**HS-103 Ethics for Human Service Workers**  
2 credits, Winter

Explores the professional issues students will face when in a helping relationship. Introduces the professional codes of ethics associated with the helping professions. Addresses solving ethical dilemmas using professional guidelines. Topics include client rights, confidentiality, professional boundaries, legal issues in helping, competence, and cultural diversity.

**HS-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, with attention to psycho-social need, pain and symptom control, delivery of medical care, family dynamics, and philosophical and ethical questions. Required to become a Hospice Volunteer.

**HS-154 Community Resources**  
3 credits, Winter

Explores local community social service resources. Identifies services, eligibility criteria, mission, policies, politics of agencies, identification of client needs, various referral processes, and historical, political and social trends.

**HS-156 Interviewing Theory & Techniques**  
3 credits, Winter

Provides the theory and specific techniques required for entry-level interviewing in human service settings.

**HS-165 Activity Director**  
3 credits, not offered every term

Provides training for activity directors in long-term care and residential facilities. Focuses on therapeutic activities to promote continual growth and development in residents.

**HS-170 Introduction to Field Experience-Human Services**  
3 credits, Spring

Exploration of Human Services in the workplace and organizations, including work stress, supervision, ethics, cultural diversity, and social responsibility. Prerequisite to Human Services/CWE courses.

**HS-211 HIV, TB, and Infectious Diseases**  
1 credit, Winter

Course explores 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

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 Career Planning**  
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 & 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-260 Victim Advocacy & Assistance**  
4 credits, Fall/Spring

Provides basic 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 covered 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**  
4 credits, Fall

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. Required: Instructor consent. Prerequisite: HS-170 (except CDF students). Corequisite: CWE-281.

**HS-281 Human Services Generalist II: CWE/Practicum**  
4 credits, Winter

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. Required: Instructor consent. Prerequisite: HS-170. Corequisite: CWE-282.

**HS-282 Human Services Generalist III: CWE/Practicum**  
4 credits, Spring

Cooperative Work Experience level III. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology, and other related occupations. Required: Instructor consent. Prerequisite: HS-170. Corequisite: CWE-283.

**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 RD-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 RD-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 RD-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 RD-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 RD-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 RD-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. Prerequisites: Pass RD-090 or placement in RD-115, pass WR-095 or placement in WR-121. Recommended: Sequence of HST-201, HST-202 and HST-203 is taken in order.

**HST-202 History of the United States****4 credits, Winter**

Covers the period of United States history from the Age of Jackson to World War I. Prerequisites: Pass RD-090 or placement in RD-115, pass WR-095 or placement in WR-121. Recommended: Sequence of HST-201, HST-202 and HST-203 is taken in order.

**HST-203 History of the United States****4 credits, Spring**

Covers the period of United States history since WWI. Prerequisites: Pass RD-090 or placement in RD-115, pass WR-095 or placement in WR-121. Recommended: Sequence of HST-201, HST-202 and HST-203 is taken in order.

**HST-210 The Great Depression & New Deal in America****4 credits, not offered every term**

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. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**HST-220 Introduction to Oral History****4 credits, not offered every term**

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. Also covers methods, techniques, ethics, and best practices in the production of an oral history project. Each class completes oral history interviews with local residents in regard to a specific time period in 20th century American history. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**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. Required: Instructor consent & a CWE seminar.

**HUM*****Humanities*****HUM-160 Faith & Reason****5 credits, not offered every term**

Introduction to classical philosophy, sacred texts, modern fiction, poetry, theology, evolutionary biology, and cosmology. Consideration of how personal concepts of faith and reason and institutions of science and religion, shape personal intellectual landscapes. Recommended: Pass RD-090 or placement in RD-115.

**HUM-170 Metamorphoses****5 credits, not offered every year**

Investigates the process of change within human cultures and individuals. By exploring myth, science, art, religion, and literature, we approach a better understanding of the ability of humans to change. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-180 Pathway to Sustainability****5 credits, Fall**

Can we create a more sustainable and just world? Will we question our assumptions regarding economic models, democracy, our relationships with the environment, and social structures? What are the roots of the current ecological crisis? Recommended: Pass RD-090 or placement in RD-115.

**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? Recommended: Pass RD-090 or placement in RD-115.

**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? Recommended: Pass RD-090 or placement in RD-115.

**HUM-233 Electronic Culture**  
4 credits, not offered every term

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-235 Perspectives on Terrorism**  
4 credits, not offered every term

Explores the ways in which different academic disciplines in the social sciences and humanities construct historical, psychological, cultural, theological, sociological, and philosophical arguments and themes around the topic of terrorism and terrorist-related issues. Identifies underlying assumptions upon which these arguments and themes are based and considers the cultural expressions they both engender and reflect. Prerequisites: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-240 American Military Conflict: Total War**  
4 credits, not offered every term

Provides students with the fundamental knowledge of the politics and geography of United States military operations when conducting "Total War" as applied in conflicts from The Civil War through WWII. Recommended: Pass RD-090 or placement in RD-115.

**HUM-241 American Military Conflict: The Cold War**

4 credits, not offered every term

Provides students with the fundamental knowledge of the politics and geography of United States military operations when conducting "The Cold War" as applied in conflicts in Korea, Vietnam and the planned defense of Western Europe. Recommended: Pass RD-090 or placement in RD-115.

**HUM-242 American Military Conflict: The War on Terror**

4 credits, not offered every term

Provides students with the fundamental knowledge of the politics and geography of United States military operations when conducting "The War on Terror," as applied in conflicts in Libya, Iraq, Afghanistan, and various other parts of the world. Pass RD-090 or placement in RD-115.

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**J****Journalism****J-134 Photojournalism**

4 credits, not offered every term

Introduces the student to photojournalism, emphasizing composition, lighting and creative ways to illustrate a news story through weekly shooting assignments. Recommended: Basic photography skills.

**J-211 Mass Media & Society**

4 credits, not offered every term

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 RD-090 or placement in RD-115; pass WR-095 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 award-winning student-run newspaper and its website. Students study and produce news stories and photos. In doing so, they learn different writing styles, photography rules, ethical standards of news gathering and the rights of a free press in a democracy. May be repeated up to 9 credits. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121; pass J-216.

**J-216 Reporting**

4 credits, Fall/Spring

Introduces students to the fundamentals of journalism: news gathering, news writing style, interviewing, the laws of libel copyright and the rights and responsibilities of a free press in a democracy. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**J-220 Introduction to Broadcast Journalism**

4 credits, Fall/Winter/Spring

Offers students interested in broadcast journalism basic skills of writing, reporting and camera operation for broadcast. Lab component included. Recommended: Pass WR-095 or placement in WR-121.

**J-221 Broadcast Journalism**

4 credits, Fall/Winter/Spring

Offers students interested in broadcast journalism intermediate skills of editing, compression and uploading for broadcast. Lab component included. Recommended: Pass WR-095 or placement in WR-121. Prerequisite: Pass J-220 with C or better or instructor consent.

**J-222 Advanced Broadcast Journalism**

4 credits, Fall/Winter/Spring

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 WR-095 or placement in WR-121. Prerequisite: Pass J-220 and J-221 with C or better or instructor consent.

**J-226 College Newspaper: Design and Production****4 credits, Fall/Winter/Spring**

Students learn Adobe InDesign, write headlines, lay out pages and use Adobe InDesign software to produce and ultimately distribute the weekly student newspaper, The Clackamas Print. May be repeated for up to 12 credits. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**J-230 Multimedia Reporting****4 credits, Winter**

Provides students with hands-on training in news reporting for the Internet, including writing, blogging, podcasting, digital photography and audio slide shows. Students will also study and apply media law including libel, copyright and the rights of a free press in a democracy. Recommended: pass WR-095 or placement in WR-121.

**J-280 Journalism/CWE****2-6 credits, Fall/Winter/Spring**

Cooperative work experience. Provides students with on-the-job experience and training related to journalism. Required: Instructor consent & a CWE seminar.

**J-280A Public Relations/CWE****2-6 credits, Fall/Winter/Spring**

Provides students with on-the-job experience and training related to public relations. Required: Instructor consent & a CWE seminar.

**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**

Understanding and effectively communicating with other healthcare professionals. Includes pronunciation, spelling, and meaning of words. Introduction to pathophysiology/disease processes.

**MA-112 Medical Office Practice****4 credits, Fall**

Fundamental information pertaining to the ambulatory care setting. Examines medical law and bioethics and introduces students to the administrative and transdisciplinary skills/competencies of a medical assistant. Required: Instructor consent. Corequisites: BI-120 and MA-145.

**MA-115 Phlebotomy for Medical Assistants****1 credit, Fall/Spring**

Develops basic understanding and application of blood specimen collection and handling techniques used in the ambulatory care setting and hospital laboratory setting. Restricted: Clinical Laboratory Assistant and Medical Assistant students only. Required: Instructor consent. Prerequisites: Pass MA-116, MA-117, MA-118, MTH-054. Corequisite: MA-121.

**MA-116 Introduction to Medications****3 credits, Winter**

Medications commonly administered in the ambulatory care setting. Legal aspects of administering medications as well as therapeutic and adverse outcomes of medications. Required: Instructor consent. Prerequisites: Pass BI-120, MA-110, MA-112 and MA-145. Corequisites: MA-117, MA-118 and MTH-054.

**MA-117 Clinical Lab Procedures I****2 credits, Winter**

Introduces common laboratory procedures and terminology used in the ambulatory care setting. Required: Instructor consent. Prerequisites: Pass MA-110, MA-112 and MA-145. Corequisites: MA-116, MA-118 and MTH-054.

**MA-118 Examination Room Techniques****4 credits, Winter**

Fundamental information pertaining to the ambulatory care setting. Examines office procedures including medical asepsis, vital signs, physical exams including documentation, special exams and procedures and introduces students to the clinical and transdisciplinary skill/competencies of a medical assistant. Required: Instructor consent. Prerequisites: Pass MA-110, MA-112 and MA-145. Corequisites: MA-116, MA-117 and MTH-054.

**MA-119 Medical Assisting Practicum****9 credits, Spring**

Under supervision within the ambulatory care setting, the student will apply both administrative and clinical knowledge and practices as attained within the Medical Assisting course curriculum. Required: Instructor consent. Student must complete and pass criminal history background check and urine drug/alcohol screen in order to be placed in a practicum site. Prerequisites: Pass MA-115 and MA-121.

**MA-121 Clinical Lab Procedures II**  
2 credits, Spring

Designed to instill a basic understanding of simple, common laboratory terminology and procedures used in a general medical office laboratory to aid the physician in the diagnosis and treatment of disease. Laboratory safety, the prevention of blood born disease transmission and scope of practice will be emphasized. Required: Instructor consent. Enrolled in the Medical Assistant program. Prerequisites: Pass MA-117.

**MA-145 Insurance & Health Information Management**  
3 credits, Fall

ICD9/CPT coding, insurance and billing, accounts receivable and data management in the ambulatory care office. Restricted: Medical Assistant students only. Required: Instructor consent. Corequisites: BI-120 and MA-112.

**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. This 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, as well as AC and DC electrical fundamentals. 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.

**MET-213 Strength of Materials**  
4 credits, not offered every term

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.

**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-101 Essential Skills for Manufacturing**

1-6 credits, not offered every term

This course focuses on the basic skills for entry-level operator, processor and assembler jobs in the manufacturing and logistics industries. Specialized curriculum covers print reading, precision measurement, manufacturing processes, shop math, safety, workplace readiness, team building and communication. No prior experience is necessary.

**MFG-104 Print Reading**  
2 credits, Fall/Winter/Spring

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, Winter

Covers precision measuring tools such as micrometers, dial indicators, gauge blocks, sine bars and other instruments used in quality control of manufactured products.

**MFG-106 Applied Geometric Dimensioning & Tolerancing for Manufacturing**  
3 credits, Spring

Introduces participants to the application of gauging and inspection using Geometric Dimensioning and Tolerancing. Students will identify inspection equipment and inspect GDT characteristics while experiencing their manufacturing implications.

**MFG-107 Industrial Safety & First Aid**  
3 credits, Fall/Winter/Spring

The 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, Automated External Defibrillator (AED) and CPR.

**MFG-109 Computer Literacy for Technicians**  
3 credits, Fall/Winter/Spring

Presents the uses of computers in business and industry. Subjects covered include computer platforms, basic hardware, data communication, and operating systems. Reviews and uses word processing, spreadsheet, and database software for the PC.

**MFG-110 Manufacturing Special Projects**  
1-9 credits, Fall/Winter/Spring

Allows students a great deal of latitude in project selection, design, and production utilizing manual machine tools, CNC machine tools, CAD/CAM and EDMs. A solid understanding of all basic machine tools is expected. Required: Instructor consent.

**MFG-111 Machine Tool Fundamentals I**  
3-9 credits, Fall/Winter/Spring

Covers machine tool operations including drill presses, lathes, and milling machines. Includes internal and external threading. Recommended: Completion of MFG-104 and MFG-107.

**MFG-112 Machine Tool Fundamentals II**  
3-9 credits, Fall/Winter/Spring

Covers setup and operation of the vertical milling machine and boring techniques on the lathe. Includes surface grinding and selection of abrasive grinding wheels. Recommended: Completion of MFG-111.

**MFG-113 Machine Tool Fundamentals III**  
3-9 credits, Fall/Winter/Spring

Topics include offset boring heads, rotary tables, indexing devices, and taper attachments. Also covers applied technical math, inspection techniques, optical comparators, coordinate measuring machines, and cylindrical grinding. Recommended: Completion of MFG-111 and MFG-112.

**MFG-123 Instrumentation and Controls**  
3 credits, Winter

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 actuator and their applications. Instruction will also be given on application development in NI LabView to create process control programs. 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

A study of the 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 then build on this for an understanding of programmable logic controllers (PLC) systems. Recommended: Completion of MFG-130.

**MFG-140 Principles of Fluid Power**  
3 credits, Winter

Course provides student 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-200 Introduction to CNC**  
1 credit, not offered every term

Short course to prepare students to be entry-level CNC machine operators. Covers fundamentals of operation, setup principles and G & M code programming. Students will use hands-on activities on industrial milling and turning centers. Recommended for individuals with limited knowledge of CNC machining. Recommended: Completion of MFG-111.

**MFG-201 CNC I: Set-up & Operation**  
4 credits, Fall

“Hands-on” class will teach students how to set-up and operate CNC milling centers and will include an introduction to basic G&M-code programming. Designed for persons with little or no previous experience. Recommended: Completion of MFG-109, MFG-112 and MTH-050.

**MFG-202 CNC II: Programming & Operation**  
4 credits, Winter

Places a heavy emphasis on writing G&M-code. Students will be taught more advanced programming and operation of CNC milling centers and basic programming, set-up and operation of CNC turning centers. Recommended: Completion of MFG-201.

**MFG-203 CNC III: Applied Programming & Operation**  
3 credits, Spring

Students work individually or in small groups to design, program, manufacture and test advanced projects using: CNC mills, CNC lathes, Electrical Discharge Machines and various software applications. Introduction to principles and operation of EDM included. Recommended: Completion of MFG-201 or MFG-204.

**MFG-204 Computer-Aided Manufacturing I**  
4 credits, Fall

Introduction to computer-aided part 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. Recommended: Completion of MFG-109, MFG-112.

**MFG-205 Computer-Aided Manufacturing II**  
4 credits, Winter

Continuation of CAM I. Includes instruction in Mastercam surfaces and lathe and solid modeling software. Emphasis on hands-on manufacturing activities. Additional topics might include reverse engineering, automation, robotics and motion control. Recommended: Completion of MFG-204.

**MFG-206 Computer-Aided Manufacturing III**  
3 credits, Spring

Final class in the Computer-Aided Manufacturing series will concentrate on a capstone project. Students will design, program, and fabricate an industrial caliber independent project. Recommended: Completion of MFG-205.

**MFG-209 Programming and Automation for Manufacturing**  
3 credits, Winter

High-level computer literacy for technologists. Focus is on structured computer programming in Visual Basic language and the application of programming industrial automation. Hands-on experience in data acquisition. 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 are assigned a variety of hands-on projects based on their skill level and interest. 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

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. Recommended: Completion of MFG-104, MFG-105 and MFG-113.

**MFG-221 Materials Science**  
3 credits, Spring

Introduces metallurgy and materials 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, not offered every term

Covers the creation and manipulation of two and three dimensional wire frame models as well as the creating, editing, and verification of 2-1/2 axis toolpaths. A fundamental understanding of the CAD/CAM process will be gained.

**MFG-272 Mastercam Mill II**  
4 credits, not offered every term

Students construct three-dimensional geometric models using solids and surface modeling techniques. Students program models using advanced multi-axis programming techniques utilizing all aspects of roughing and finishing. Projects verified with solids toolpath verification. Recommended: 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 machining will be discussed. Highlights of dynamic milling, machine simulation, program 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-271, MFG-204, 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. Required: Instructor consent and a CWE seminar.

**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.

**MTH-050 Technical Mathematics I**  
3 credits, Fall/Winter/Spring/Summer

Designed for career and technical students. The 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.

**MTH-052 Medical Calculations for Nurses**  
4 credits, not offered every term

Topics include problem solving, ratios and proportions, percents, accuracy and precision of metric, apothecary and household systems of measurement, and calculating oral and parenteral medication doses as well as intravenous and critical care calculations. Required: Instructor consent. Restricted to WIIN students. Prerequisite: Pass MTH-020 with a C or better or placement in MTH-060. This course cannot be waived.

**MTH-054 Medical Calculations for Medical Assistants**  
4 credits, not offered every term

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, and inequalities are explored numerically, symbolically, graphically, and verbally. Prerequisite: Pass MTH-020 with a C or better or placement in MTH-060.

**MTH-065 Algebra II**  
4 credits, Fall/Winter/Spring/Summer

The second term of topics in Algebra. 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.

**MTH-080 Technical Mathematics II**  
3 credits, not offered every term

The second in a sequence designed for career and 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 and primary treatment. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-080 or MTH-095. Corequisite: WQT-110. This course cannot be waived.

**MTH-082B Waterworks Math I**  
1 credit, Fall

Problem solving for waterworks applications. Introduction to basic algebra and math concepts, conversions and calculations encountered in the waterworks industry. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-080 or MTH-095. Corequisite: WQT-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-065 with a C or better or placement in MTH-080 or MTH-095. Corequisite: WQT-120. This course cannot be waived.

**MTH-082D Waterworks Math II**  
1 credit, Winter

Problem solving for waterworks applications. Introduction to C.T. calculations, chemical concentrations, Pounds formula, and basic hydraulics. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-080 or MTH-095. Corequisite: WQT-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. Measurements accuracy, rounding rules and errors, significant figures, scientific notation, metric prefixes, simple statistics, average and standard deviation of a population. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-080 or MTH-095. Corequisite: WQT-125. This course cannot be waived.

**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.

**MTH-105 Introduction to Contemporary Math****4 credits, Fall/Winter/Spring/Summer**

A transfer-level mathematics course for non-science majors. Topics covered in this course focus students on critical thinking, problem solving, mathematical communication. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-095 with a C or better or placement in MTH-105 or MTH-111.

**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, regression, the binomial theorem and an introduction to sequences and series. Recommended: Pass RD-090 or placement in RD-115; Pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-095 with a C or better or placement in MTH-111.

**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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-111 with a C or better or placement in MTH-112.

**MTH-205 A Bridge to University Mathematics****3 credits, not offered every term**

A “bridge course” designed to help students transition from computation-based mathematics to the more proof-based curriculum typical of junior-senior collegiate level courses. Topics include: group theory, elementary set theory, proof, and argumentation. Prerequisite: MTH-112 or instructor consent.

**MTH-211 Fundamentals of Elementary Math I****4 credits, not offered every term**

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-095 with a C or better or placement in MTH-111.

**MTH-212 Fundamentals of Elementary Math II****4 credits, not offered every term**

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 RD-090 or placement in RD-115; pass WR-095 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, not offered every year**

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 RD-090 or placement in RD-115; pass WR-095 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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-105 or MTH-111 with a C or better or placement in MTH-112.

**MTH-244 Statistics II****4 credits, Fall/Winter/Spring/Summer**

The tools learned in Statistics I are used for hypothesis tests and confidence intervals for one and two populations, linear regression, inference about regression, and chi-square tests. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-243 with a C or better.

**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. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-112 with a C or better or placement in MTH-251.

**MTH-252 Calculus II****5 credits, Winter/Spring**

This course is the second in a four-term Calculus sequence designed for students in science, engineering, or mathematics. It will focus on the work of integration. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-251 with a C or better.

**MTH-253 Calculus III****5 credits, not offered every term**

This course is the third in a four-term Calculus sequence. Topics include sequences and series (power, Taylor, MacLaurin), tests of convergence, Taylor polynomials, and multiple integrals using Cartesian, polar, cylindrical, and spherical coordinate systems. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-252 with a C or better.

**MTH-254 Vector Calculus****5 credits, not offered every term**

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-252 with a C or better.

**MTH-256 Differential Equations****4 credits, not offered every term**

An introduction to the study of first-order differential equations, first-order systems of differential equations, linear systems of equations, and applications of these topics. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement WR-121. Prerequisite: Pass MTH-252 with a C or better.

**MTH-261 Linear Algebra****4 credits, not offered every term**

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-252 with a C or better, or instructor consent.

**MTH-280 Mathematics/CWE****2-6 credits, Fall/Winter/Spring**

Cooperative work experience. Practical experience in teaching, tutoring or applying mathematics while supervised by a teacher or mathematician. May be repeated for up to 12 credits. Restricted: Math lab tutors.

**MUP****Music Performance****MUP-100 Individual Lessons: Non-Music Majors****1 credit, Fall/Winter/Spring/Summer**

Private lessons for beginners, non-music majors, and students who receive a low rating in MUP 171-191 auditions. Brass, woodwind, percussion, string and keyboard instruments, and voice. May be repeated for up to 6 credits.

**MUP-102 Concert Band****0-2 credits, Fall/Winter/Spring**

For non-majors and music majors. Introduction to the study of traditional and contemporary band literature. This is the first year of a two-year course of study that includes performance, study of common styles and practices of historically and culturally significant composers/arrangers, and study of historical issues related to the development and performance of band literature. Provides a thorough groundwork in the fundamental ideas, techniques, and practices of band music and ensemble performance. No audition required. May be repeated for up to 8 credits. Required: Completion of high school or high school performance level. Ability to read music and play a band instrument.

**MUP-104 Pep Band/Combo-Impro****0-1 credits, Fall/Winter/Spring**

Instrumental performing group concentrating on rock, pop, and contemporary styles in the small to medium-sized group setting. No audition required. May be repeated for up to 8 credits. Recommended: MUP-105 or MUP-125.

**MUP-105 Jazz Ensemble****3 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. Provides a thorough groundwork in the fundamental ideas and practices of jazz music and jazz ensemble performance. May be repeated for up to 8 credits. Required: Instructor consent. Demonstrated ability to perform at the appropriate level as determined by the instructor.

**MUP-122 Chamber Choir****3 credits, Fall/Winter/Spring**

Select vocal ensemble which rehearses and performs choral music from the Renaissance to the 21st century. Provides preparation for entering professional fields of music and performance. Emphasis on a cappella singing applied to appropriate chamber music. Recommended for vocal music majors. By audition. May be repeated for up to 8 credits.

**MUP-125 Vocal Jazz Ensemble: Mainstream****3 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. By audition. May be repeated for up to 8 credits. Recommended: MUP-104.

**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-158 Chamber Ensemble**  
0-2 credits, Fall/Winter/Spring

Rehearsal and performance of traditional vocal and instrumental chamber music (one musician per part). Includes concerts and coaching by area professionals. Highly recommended for music majors. May be repeated for up to 8 credits. Recommended: MUP-102 or MUP-122.

**MUP-171 Individual Lessons: Piano**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-171J Individual Lessons: Jazz Piano**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-174 Individual Lessons: Voice**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-174J Individual Lessons: Jazz Voice**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-175 Individual Lessons: Violin**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-176 Individual Lessons: Viola**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-177 Individual Lessons: Cello**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-178 Individual Lessons: Bass**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-178J Individual Lessons: Jazz Bass**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-179 Individual Lessons: Harp**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-180 Individual Lessons: Guitar**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-180J Individual Lessons: Jazz Guitar**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-181 Individual Lessons: Flute**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-181J Individual Lessons: Jazz Flute**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-182 Individual Lessons: Oboe**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-183 Individual Lessons: Clarinet**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-183J Individual Lessons: Jazz Clarinet**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-184 Individual Lessons: Saxophone**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-184J Individual Lessons: Jazz Saxophone**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-185 Individual Lessons: Bassoon**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-186 Individual Lessons: Trumpet**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-186J Individual Lessons: Jazz Trumpet**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-187 Individual Lessons: French Horn**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-188 Individual Lessons: Trombone**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-188J Individual Lessons: Jazz Trombone**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-189 Individual Lessons: Baritone**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-190 Individual Lessons: Tuba**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-191 Individual Lessons: Percussion**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-191J Individual Lessons: Jazz Percussion**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-202 Concert Band**  
0-2 credits, Fall/Winter/Spring

Performance and study of traditional and contemporary band literature. Emphasis on musical style and basic instrumental techniques as applied to ensemble playing. No audition required. Tuition waivers available. Required: Ability to read music and play a band instrument. May be repeated for up to 8 credits.

**MUP-204 Pep Band/Combo-Impro**  
0-1 credits, Fall/Winter/Spring

Instrumental performing group concentrating on rock, pop, and contemporary styles in the small to medium-sized group setting. No audition required. May be repeated for up to 8 credits. Recommended: MUP-205 or MUP-225.

**MUP-205 Jazz Ensemble**  
3 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. Provides a thorough groundwork in the fundamental ideas and practices of jazz music and jazz ensemble performance. May be repeated for up to 8 credits. Required: Instructor consent. Demonstrated ability to perform at the appropriate level as determined by the instructor.

**MUP-222 Chamber Choir**  
3 credits, Fall/Winter/Spring

Select vocal ensemble which rehearses and performs choral music from the Renaissance to the 21st century. Provides preparation for entering professional fields of music and performance. Emphasis on a cappella singing applied to appropriate chamber music. Recommended for vocal music majors. By audition. May be repeated for up to 8 credits.

**MUP-225 Vocal Jazz Ensemble: Mainstream**  
3 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. Emphasis on style, improvisation, and techniques. By audition. May be repeated for up to 8 credits. Recommended: MUP-204.

**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**  
0-2 credits, Fall/Winter/Spring

Rehearsal and performance of traditional vocal and instrumental chamber music (one musician per part). Includes concerts and coaching by area professionals. Highly recommended for music majors. May be repeated for up to 8 credits. Recommended: MUP-202 or MUP-222.

**MUP-271 Individual Lessons: Piano**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-271J Individual Lessons: Jazz Piano**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-274 Individual Lessons: Voice**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-274J Individual Lessons: Jazz Voice**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-275 Individual Lessons: Violin**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-276 Individual Lessons: Viola**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-277 Individual Lessons: Cello**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-278 Individual Lessons: Bass**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-278J Individual Lessons: Jazz Bass**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-279 Individual Lessons: Harp**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-280 Individual Lessons: Guitar**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-280J Individual Lessons: Jazz Guitar**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-281 Individual Lessons: Flute**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-281J Individual Lessons: Jazz Flute**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-282 Individual Lessons: Oboe**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-283 Individual Lessons: Clarinet**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-283J Individual Lessons: Jazz Clarinet**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-284 Individual Lessons: Saxophone**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-284J Individual Lessons: Jazz Saxophone**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-285 Individual Lessons: Bassoon**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-286 Individual Lessons: Trumpet**  
1 credit, Fall/Winter/Spring/Summer

College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-286J Individual Lessons: Jazz Trumpet**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-287 Individual Lessons: French Horn**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-288 Individual Lessons: Trombone**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-288J Individual Lessons: Jazz Trombone**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUP-289 Individual Lessons: Baritone**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-290 Individual Lessons: Tuba**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-291 Individual Lessons: Percussion**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

**MUP-291J Individual Lessons: Jazz Percussion**

1 credit, Fall/Winter/Spring/Summer  
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

**MUS****Music****MUS-101 Music Fundamentals**

3 credits, Fall/Winter/Spring  
Introduction to fundamentals of reading and writing music. Designed for non-music majors or majors needing substantial preparation for Music Theory I.

**MUS-102 Music Fundamentals**

3 credits, Winter  
Introduction to fundamentals of reading and writing music. Designed for non-music majors or majors needing substantial preparation for Music Theory I.

**MUS-103 Music Fundamentals**

3 credits, Spring  
Introduction to fundamentals of reading and writing music. Designed for non-music majors or majors needing substantial preparation for Music Theory I.

**MUS-105 Music Appreciation**

3 credits, Fall/Winter/Spring/Summer  
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 RD-090 or placement in RD-115, and pass WR-095 or placement in WR-121.

**MUS-106 Audio Recording at Home**

1 credit, Fall/Winter/Spring/Summer  
An overview of the basic tools and techniques used in audio recording at home. Get help with your home recording equipment. 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  
Introduction to the basic techniques and tools used in audio recording. Areas of study include signal path, microphone applications, software, hardware, outboard gear, soldering techniques, 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: Pass 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-107 and MUS-108.



**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. Required: Ability to read music. This course required for music majors. Prerequisite: Pass the Music Theory Placement/Entrance Test. Recommended: Pass MTH-095 or placement in MTH-111; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**MUS-111L MIDI Lab I**  
1 credit, Fall

Introduces students to Finale (music notation software) on Macintosh computers. Required for first-year music majors.

**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. Required: Ability to read music. This course is required for music majors. Prerequisite: Pass the Music Theory Placement/Entrance Test. Recommended: Pass MTH-095 or placement in MTH-111, pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass MUS-111 and MUS-111L.

**MUS-112L MIDI Lab I**  
1 credit, Winter

Introduces students to Finale (music notation software) on Macintosh computers. Required for first-year music majors.

**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 motivatic 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. Required: Ability to read music. This course is required for music majors. Prerequisite: Pass the Music Theory Placement/Entrance Test. Recommended: Pass MTH-095 or placement in MTH-111, pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass MUS-112 and MUS-112L.

**MUS-113L MIDI Lab I**  
1 credit, Spring

Introduces students to Finale (music notation software) on Macintosh computers. Required for first-year music majors.

**MUS-114 Aural Skills I**  
2 credits, Fall

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

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.

**MUS-116 Aural Skills I**  
2 credits, Spring

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.

**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. Required for music majors.

**MUS-128 Keyboard Skills I**  
2 credits, Winter

Develops basic keyboard skills. Studies keyboard applications of the materials of tonal music. Required for music majors. Prerequisite: Pass MUS-127.

**MUS-129 Keyboard Skills I**  
2 credits, Spring

Develops basic keyboard skills. Studies keyboard applications of the materials of tonal music. Required for music majors. Prerequisite: Pass MUS-128.

**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

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

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 low rating on MUP-174 audition.

**MUS-135 Group Voice: Anyone Can Sing**

1 credit, Winter

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 low rating on MUP-174 audition.

**MUS-136 Group Voice: Anyone Can Sing**

1 credit, Spring

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 low rating on MUP-174 audition.

**MUS-137 Group Guitar I: Guitar for Dummies**

1 credit, Fall/Winter/Spring

For beginning to advanced players. Covers finger picking, lead guitar, rock and popular styles, music reading, and music theory. Students provide their own instrument.

**MUS-138 Group Guitar II**

1 credit, Winter

For intermediate to advanced players. Covers finger picking, lead guitar, rock and popular styles, music reading, and music theory. Students provide their own instrument.

**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 course 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, loops, etc. Uses common production software/hardware.

**MUS-143 Introduction To Electronic Music II: Sequencing & Sampling**

3 credits, Fall/Winter/Spring

An introduction to digital audio in the MIDI environment. Course continues MIDI sequencing and integrates audio into the MIDI environment. Uses common production software/hardware. Prerequisite: Pass MUS-142.

**MUS-144 Introduction To Electronic Music III: Digital Audio**

3 credits, Fall/Winter/Spring

Exploration of digital sound recording and editing, synthesis, sampling, and sequencing. Presents CD production techniques integrating digital audio with the MIDI sequence. Uses Pro Tools, and other common production software/hardware. Prerequisites: Pass MUS-143.

**MUS-145 Introduction to Digital Sound, Video & Animation**

3 credits, not offered every term

An introduction to new media. Includes sound, video, animation, mp3, DVD, and compression technology.

**MUS-147 Music, Sound & Moviemaking**

1 credit, Fall/Winter/Spring

Introduction to music and sound as related to moviemaking. Students will have the opportunity to create and assemble music, sound, and video into a finished product.

**MUS-148 Live Sound Engineering**

3 credits, not offered every year

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-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.

**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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**MUS-206 Music Literature: History of Rock**

**4 credits, Fall/Winter/Spring/Summer**  
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 RD-090 or placement in RD-115; pass WR-095 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 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. Required: Ability to read music. This course is required for music majors. Prerequisite: MUS-113 and MUS-113L.

**MUS-211L MIDI Lab II**

**1 credit, Fall**  
Advanced use of Finale (music notation software). Required for second-year music majors. Prerequisite: Pass MUS-113L.

**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. Required: Ability to read music. This course is required for music majors. Prerequisites: Pass MUS-211 and MUS-211L.

**MUS-212L MIDI Lab 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 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. Required: Ability to read music. This course is required for music majors. Prerequisites: Pass MUS-212 & pass MUS-212L.

**MUS-213L MIDI Lab II**

**1 credit, Spring**  
Advanced use of Finale (music notation software). Required for second-year music majors. Prerequisite: Pass MUS-212L.

**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.

**MUS-215 Keyboard Skills II**

**2 credits, Winter**  
Advanced keyboard applications of the materials of diatonic and chromatic music. Required for second-year music majors. Prerequisite: Pass MUS-214.

**MUS-216 Keyboard Skills II**

**2 credits, Spring**  
Advanced keyboard applications of the materials of diatonic and chromatic music. Required for second-year music majors. Prerequisite: Pass MUS-215.

**MUS-224 Aural Skills II**

**2 credits, Fall**  
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.

**MUS-225 Aural Skills II**

**2 credits, Winter**  
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-214.

**MUS-226 Aural Skills II**

**2 credits, Spring**  
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.

**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 music and sound as related to moviemaking. Students will have the opportunity to create and assemble music and sound for video into a finished product. Explores the basic components of music and sound as they relate to commercial film/video production.

**MUS-280 Music/CWE**

2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of music. Required: Instructor consent & a CWE seminar. Prerequisites: Pass MUS-107, MUS-140 and MUS-142.

**NRS****Nursing****NRS-110 Foundations of Nursing - Health Promotion**

5 credits, Fall

Introduces the learner to framework of the Oregon Consortium of Nursing Education (OCNE) curriculum. The emphasis is on health promotion across the life span including learning about self-health and client health practices. To support self and client health practices, students learn to access research evidence about health 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. Prerequisite: Admission into the CCC Nursing Program.

**NRS-110C Foundations of Nursing - Health Promotion Clinical**

4 credits, Fall

Clinical application of NRS-110 content.

**NRS-111 Foundations of Nursing - Chronic Illness I**

2 credits, Winter

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. Includes classroom and clinical learning experiences. Prerequisite: NRS-110. Corequisites: NRS-230 and NRS-232.

**NRS-111C Foundations of Nursing in Chronic Illness I Clinical**

4 credits, Winter

Clinical application of NRS-111 content. Restricted: Admitted CCC Nursing students only.

**NRS-112 Foundations of Nursing in Acute Care I**

2 credits, Spring

Introduces the learner to assessment and common interventions (including relevant technical procedures) for care of patients across the lifespan that requires 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. Prerequisite: NRS-111. Corequisites: NRS-231 and NRS-233.

**NRS-112C Foundations of Nursing in Acute Care I Clinical**

4 credits, Spring

Clinical application of NRS-112 content. Restricted: Admitted CCC Nursing students only.

**NRS-221 Chronic Illness II & End of Life**

3 credits, Winter

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 client 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. Includes classroom and clinical learning experiences. Prerequisite: NRS-222, NRS-231, NRS-233.

**NRS-221C Chronic Illness II & End of Life Clinical**

6 credits, Winter

Clinical application of NRS-221 content. Restricted: Admitted CCC Nursing students only.

**NRS-222 Nursing in Acute Care II & End of Life**  
3 credits, Fall

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.

**NRS-222C Nursing in Acute Care II & End of Life Clinical**  
6 credits, Fall

Clinical application of NRS-222 content. Restricted: Admitted CCC Nursing students only.

**NRS-224 Integrative Practicum**  
2 credits, Spring

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 the 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.

**NRS-224C Integrative Practicum Clinical**  
7 credits, Spring

Clinical application of NRS-224 content. Restricted: Admitted CCC Nursing students only.

**NRS-230 Clinical Pharmacology I**  
3 credits, Winter

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 side 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-230, BI-231, BI-232, BI-233, BI-234.

**NRS-231 Clinical Pharmacology II**  
3 credits, Spring

This sequel to NRS-230 continues to provide the theoretical background that enables students to provide safe and effective 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 drug and natural products, intervening to increase therapeutic benefits and reduce potential negative effects, and communicating appropriately with other health professionals regarding drug therapy. Addresses additional classes of drugs and related natural products not contained NRS-230. Prerequisites: BI-230, BI-231, BI-232, BI-233, BI-234.

**NRS-232 Pathophysiological Processes I**  
3 credits, Winter

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: BI-230, BI-231, BI-232, BI-233, BI-234.

**NRS-233 Pathophysiological Processes II**  
3 credits, Spring

This sequel to NRS-232 continues to explore additional 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 pathophysiological processes, teaching persons from diverse populations regarding pathophysiological processes, and communicating with other health professionals regarding pathophysiological processes. Addresses additional pathophysiological processes not contained in NRS-232. Prerequisite: NRS-232.

**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 sub-acute care settings as well as in the community. Includes 75 hours of didactic and skills lab instruction. May not be challenged.

**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 in the community. Includes 75 hours of clinical practicum. May not be challenged.

**NUR-101 Certified Nursing Assistant 2-Acute**

3 credits, Fall/Winter/Spring/Summer

Prepares the student to perform routine nursing assistant tasks that are needed in the acute care setting. Includes 64 hours of didactic and skills lab instruction. May not be challenged.

**NUR-101C Certified Nursing Assistant 2-Acute Clinical**

0 credit, Winter/Summer

Prepares the student to perform routine nursing assistant tasks to clients in the acute care setting. Includes 24 hours of clinical practicum. May not be challenged.

**NUR-160 Fluid and Electrolytes**

2 credits, not offered every term

Focus of this course is to assist students in the understanding of fluid, electrolytes, acid-base balances and the interpretation of various diagnostic tests related to the client's clinical condition. Limited to healthcare professionals/healthcare students. Prerequisite: Pass BI-233.

**NUR-217 EKG Interpretation**

1 credit, not offered every term

Course focuses on developing skills in arrhythmia recognition and interpretation. Overview of cardiac A & P and electrophysiology. Recommended for graduating nurses or practicing registered nurses who desire to increase their knowledge in EKG analysis.

**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

Activities 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 technique are covered.

**PE-260 Care & Prevention of Athletic Injuries**

2 credits, Winter

Care and prevention of athletic injuries. Taping techniques and rehabilitation methods of injury will be discussed and practiced.

**PE-270 Sport & Exercise Psychology**

3 credits, Fall/Winter/Spring

Provides students the basic understanding, and knowledge of psychological skills used to improve physical performance in themselves and/or their peers/teammates.

**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. Required: Instructor consent & a CWE seminar.

**PE-294A Philosophy of Coaching**

2 credits, Fall/Winter/Spring

Designed to enhance the leadership, teaching, and management skills of coaches as they relate to interaction 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 discussing the history of astronomy, the Earth and moon, all planets in our solar system, along with asteroids, meteors, and comets. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 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, Winter/Spring

A lab course discussing the properties of our sun and other stars, and stellar evolution. Prerequisite: Pass PH-121 or GS-107.

**PH-123 General Astronomy****4 credits, Spring**

A lab course discussing star clusters, the properties of our own galaxy, the other galaxies and cosmology. Prerequisite: Pass PH-122.

**PH-201 General Physics****5 credits, Fall**

A lab course covering vectors, motion, kinematics, forces and Newton's laws, gravity, conservation laws for momentum and energy, rotational motion, and oscillations. Prerequisite: Pass MTH-112 with a C or better or placement in MTH-251; pass RD-115 with a C or better; pass WR-095 or placement in WR-121.

**PH-202 General Physics****5 credits, Winter**

A lab course covering electricity, magnetism, DC and AC circuits, and electromagnetic radiation. Prerequisite: Pass PH-201.

**PH-203 General Physics****5 credits, Spring**

A lab course covering thermodynamics, fluids, waves, geometrical optics, wave optics, and modern physics. Prerequisite: Pass PH-201.

**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; pass RD-115 with a C or better; pass WR-095 or placement in WR-121.

**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.

**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 and MTH-252.

**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 RD-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 RD-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 RD-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 RD-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 RD-090 or placement in RD-115.

**PHL-213 Asian Philosophy****4 credits, not offered every term**

Examines the underlying belief systems of Hinduism, Buddhism, Taoism, and Confucianism. Course explores their concepts of cause and effect, freedom, personal identity, moral value, truth and enlightenment. Recommended: Pass RD-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 RD-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-011 PIE Tutoring****0 credit, Fall/Winter/Spring/Summer**

Designed for the Program for Intensive English students who need one-on-one instruction in conversation, pronunciation, reading, grammar, writing, or GED preparation. The students meet with a tutor or instructor and work on the above skill areas. Required: Instructor consent.

**PIE-014 Introduction to Business English A****3 credits, not offered every term**

Part A of a two-part series of classes designed for non-native speakers of English who are considering employment and/or training in a business field. The course teaches students the basic communication skills frequently required in everyday business interactions both in the U.S. and internationally. Required: Instructor consent.

**PIE-015 Introduction to Business English B****3 credits, not offered every term**

Part B of a two-part series of classes designed for non-native speakers of English who are considering employment and/or training in a business field. The course teaches students the basic communication skills frequently required in everyday business interactions both in the U.S. and internationally. Required: Instructor consent.

**PIE-022 Beginning ESL****0 credit, Fall/Winter/Spring/Summer**

Introduces the language necessary to function in day-to-day American society at the beginning level; listening, speaking, reading, and writing in the contexts of work, family, and community. Required: Instructor consent.

**PIE-033 Intermediate Conversation****3 credits, Fall/Winter/Spring/Summer**

Intermediate-level students study and practice speaking and listening to improve their fluency in English for living and working situations. Required: Instructor consent.

**PIE-034 Upper Intermediate Conversation****3 credits, not offered every term**

For upper-intermediate non-native speakers of English who want to study and practice speaking and listening to improve their fluency in English. Emphasis will be on developing conversational skills as needed for success in meeting personal, educational, family, and workplace goals. Required: Instructor consent.

**PIE-040 Beginning Grammar****0 credit, Fall/Winter/Spring/Summer**

Presentation and practice simple present tense of the verb "to be," nouns, descriptive/possessive adjectives, prepositions of place and time, and simple sentence structures in written and spoken English. Required: Instructor consent.

**PIE-041 Upper Beginning Grammar****0 credit, Fall/Winter/Spring/Summer**

Class will present and practice the present simple, past simple, and present continuous tenses, adverbs of frequency, articles, and nouns in written and spoken English. Required: Instructor consent.

**PIE-042 Intermediate Grammar A****3 credits, not offered every term**

Part A of a two-part series. Present and practice the formation and use of the simple present and present progressive with a focus on non-action verbs and extended time, simple past, past progressive, used to, the future, and wh-questions in written and spoken English. Required: Instructor consent.

**PIE-043 Intermediate Grammar B****3 credits, not offered every term**

Part B of a two-part series. Present and practice present perfect 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-044 Upper Intermediate Grammar A****3 credits, not offered every term**

Part A of a two-part series of classes designed to help upper-intermediate non-native speaker of English gain knowledge and proficiency in the use of verb forms that frequently occur together, gerunds, infinitives, and causative verbs. Required: Instructor consent.

**PIE-045 Upper Intermediate Grammar B****3 credits, not offered every term**

Part B of a two-part series. Presentation and practice of adjective clauses, phrasal verbs, and passive voice in written and spoken English. Required: Instructor consent.

**PIE-049 Beginning Reading and Writing****0 credit, not offered every term**

Designed to teach beginning-level students who have limited knowledge of written English. Students will practice alphabet recognition, read and write short sentences, study new vocabulary, read short paragraphs, and gain reading and scanning skills to use in everyday life and in the workplace. Required: Instructor consent.

**PIE-050 Upper Beginning Reading and Writing****0 credit, Fall/Winter/Spring/Summer**

Designed for the upper-beginning level student who reads and writes at the sentence level. Students will read short texts in order to improve reading skills. Students will write a variety of sentences and put related sentences in paragraph form. Required: Instructor consent.

**PIE-051 Upper Beginning Reading****0 credit, not offered every term**

Designed for students who read at the sentence level. Students will read short texts in order to improve reading skills. Required: Instructor consent.

**PIE-053 Intermediate Reading/Writing****6 credits, Fall/Winter/Spring/Summer**

Designed for the intermediate-level student who is ready to begin writing at the paragraph level. The major purpose of the course is to improve the student's reading and writing skills as needed for more advanced ESL and college courses, in the workplace, and in everyday life. Required: Instructor consent.

**PIE-054 Upper Intermediate Reading/Writing****6 credits, Fall/Winter/Spring/Summer**

Upper-intermediate students will practice reading and writing skills needed to succeed in college, the workplace, and everyday life. Introduction to multiple paragraph essays. Required: Instructor consent.

**PIE-060 Pronunciation A****3 credits, not offered every term**

For intermediate and higher-level students who want to sound more natural when speaking English. Focuses on increasing awareness of the sounds of American English, improving intelligibility, and producing speech more fluently. Required: Instructor consent.

**PIE-061 Pronunciation B****3 credits, not offered every term**

For students at the intermediate-level or higher who want to sound more natural when speaking English. Activities will focus on increasing student awareness of the sounds of American English, improving intelligibility, and producing speech more fluently. Required: Instructor consent.

**PIE-063 Idioms & Conversation A****3 credits, not offered every term**

Part A of a two-part that introduces common American idioms while practicing conversation skills at the upper-intermediate level. Required: Instructor consent.

**PIE-064 Idioms & Conversation B****3 credits, not offered every term**

Part B of a two-part series of classes that introduces common American idioms while practicing conversation skills at the upper intermediate level. Required: Instructor consent.



**PIE-067 Video and Conversation**  
0 credit, not offered every year

Intensifies intermediate/advanced language skills in listening and speaking. Students view Crossroads Café video series, complete workbook exercises, practice listening for specific information, participate in pair, small group, and whole class discussions and activities. Required: Instructor consent.

**PIE-070 Computer Lab**  
0 credit, Fall/Winter/Spring/Summer

Provides opportunities to improve English language skills by using language learning software and Internet websites. Required: Instructor consent.

**PIE-080 TOEFL/TOEIC Preparation**  
0 credit, not offered every term

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 test components, test-taking techniques, strategies and computer skills. Required: Instructor consent.

**PIE-082 Spelling**  
3 credits, not offered every term

Course will present and provide opportunities to practice English spelling patterns and rules and individualize instruction to address spelling challenges. Required: Instructor consent.

**PIE-083 Vocabulary Building A**  
3 credits, not offered every term

Part A of a two-part series of classes in which upper-intermediate and advanced-level students will develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and from the Academic Word List, and will develop their vocabulary acquisition skills. Required: Instructor consent.

**PIE-084 Vocabulary Building B**  
3 credit, not offered every year

Part B of a two-part series of classes in which upper-intermediate and advanced-level students will develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and from the Academic Word List, and will develop their vocabulary acquisition skills. Required: Instructor consent.

**PIE-085 Editing A**  
3 credits, not offered every term

Upper-intermediate and higher-level students will improve their writing through editing. Required: Instructor consent.

**PIE-087 Editing for Better Writing**  
6 credits, Fall/Winter/Spring/Summer

Upper-intermediate and higher-level students will improve their writing through editing. They will also engage in extended reading to provide a context for writing. Required: Instructor consent.

**PIE-090 The Clackamas Experience**  
0 credit, Fall/Winter/Spring/Summer

Designed for international students entering Clackamas Community College for the first time. Students learn about college policies and procedures, student rights and responsibilities, learning styles, possible programs of study, matriculation procedures, culture shock, and laws affecting students. Required: Instructor consent.

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**PS*****Political Science*****PS-200 Introduction to Political Science**  
4 credits, Fall/Winter/Spring

A general introduction to the field of political science. It 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 RD-090 or placement in RD-115.

**PS-201 U.S. Government: National Political Process**  
4 credits, not offered every term

Focuses on understanding the U.S. Constitution and the Bill of Rights both legally and politically. Moreover, this class examines the Congress, the Presidency and the federal courts. Recommended: Pass RD-090 or placement in RD-115.

**PS-202 U.S. Government: National Government Institutions**  
4 credits, not offered every term

Examines American political parties, the role of money in politics and American political participation in general. Examines American domestic, economic and foreign policy. Recommended: Pass RD-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 RD-090 or placement in RD-115.

**PS-204 Introduction to Comparative Politics**  
4 credits, not offered every year

Explores the various ideologies, institutions, and processes that constitute the nation-states that make up the world political system. Recommended: Pass RD-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 RD-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 RD-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 as distinct ideologies as liberalism, conservatism, socialism, libertarianism and fascism. Recommended: Pass RD-090 or placement in RD-115.

**PSY-280 Political Science/CWE**  
2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of political science. Required: Instructor consent & a CWE seminar.

**PSY****Psychology****PSY-101 Human Relations**

3 credits, Fall/Winter/Spring/Summer

Introduction to interpersonal relationships and human relations in a social context. Includes lecture and discussions/activities with an emphasis on student participation designed to provide the opportunity to gain new perspectives in the acceptance and understanding of others, demonstrate diversity skills and greater appreciation for individual differences, learn coping skills for dealing with difficult situations in life, learn strategies for student and career success, foster and increase the ability to communicate effectively in a variety of settings, and gain a greater awareness of self and interaction style. Recommended: Pass RD-090 or placement in RD-115.

**PSY-110 Psychology: An Overview**  
4 credits, not offered every term

A general introduction to the field of psychology. Explores a wide variety of topics. Recommended: Pass RD-090 or placement in RD-115.

**PSY-200 Psychology As a Natural Science**

4 credits, Fall/Winter/Spring

Introduction to physiological psychology, the study of how the nervous system produces behavior and cognition. Further topics may include consciousness, sleep, memory, emotion and language. Recommended: Pass RD-090 or placement in RD-115.

**PSY-205 Psychology As a Social Science**

4 credits, Fall/Winter/Spring

Principles of conditioning and social psychology, the study of how groups affect the individual. Further topics may include motivation, personality, development and stress. Recommended: Pass RD-090 or placement in RD-115.

**PSY-214 Introduction to Personality**  
4 credits, not offered every term

Explores the major theoretical approaches toward personality as conceptualized throughout time, from ancient Greece to contemporary research, with the greatest emphasis on theories originating in the 20th century. Recommended: Pass RD-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. Recommended: Pass RD-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. Recommended: Pass RD-090 or placement in RD-115.

**PSY-221 Introduction to Counseling**  
4 credits, Fall/Winter/Spring

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 RD-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. Recommended: Pass RD-090 or placement in 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 changes. Recommended: Pass RD-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. Required: Instructor consent & a CWE seminar.

**R****Religious Studies****R-101 Comparative Religions**

4 credits, Fall

The nature of myth and story, ancient religions, ideas of God, Judaism and introduction to religious topics. Recommended: Pass RD-090 or placement in RD-115.

**R-102 Comparative Religions**

4 credits, Winter

Covers written and oral sources, Christianity, Islam, and includes the history and philosophy of other Western religious developments. Recommended: Pass RD-090 or placement in RD-115.

**R-103 Comparative Religions**

4 credits, Spring

The history, ideas, and philosophy of the Eastern religions including Buddhism, Hinduism and Taoism. Recommended: Pass RD-090 or placement in RD-115.

**R-204 History of Christianity**

4 credits, Winter

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 RD-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 RD-090 or placement in RD-115.

**R-211 History of the Old Testament**  
4 credits, not offered every term

Covers 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 RD-090 or placement in RD-115.

**R-212 History of the New Testament**  
4 credits, Fall/Spring

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 RD-090 or placement in RD-115.

**R-214 The Historical Jesus**  
4 credits, Spring

An examination of the "Quest for the Historical Jesus" beginning with Albert Schweitzer through contemporary scholarship. Required: Successful completion of or current enrollment 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. Required: Instructor consent & a CWE seminar.

**RD****Reading**

See also Study Skills (EL).

**RD-080 Fundamentals of College Reading**

3 credits, Fall/Winter/Spring  
Focuses on fundamental reading skills for non-fiction text, including identifying main ideas, supporting details and organizational patterns. Vocabulary improvement emphasizes dictionary skills. Core reading comprehension strategies and inferences are introduced. Prerequisite: Placement in RD-080.

**RD-090 Intermediate Reading Skills**  
3 credits, Fall/Winter/Spring

Introduces and reinforces skills for success in entry-level college classes. Emphasizes vocabulary building, comprehension, reading strategies, critical thinking. Prerequisite: Pass RD-080 or placement in RD-090.

**RD-115 College Reading**  
3 credits, Fall/Winter/Spring

This transfer elective course presents reading strategies for success in college-level classes. Emphasizes comprehension, efficiency critical reading and thinking, and application of reading strategies appropriate to a variety of materials. Vocabulary development is also addressed. Prerequisite: Pass RD-090 or placement in RD-115.

**RE**

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.

**Real Estate****RE-118 Real Estate Appraisal I**  
3 credits, not offered every year

Overview of real property concepts and characteristics, legal consideration, value influences, real estate finance, types of value, economic principles, real estate markets and analysis, and ethics in appraisal.

**RE-228 Real Estate Appraisal II**  
3 credits, not offered every year

Overview of real estate appraisal approaches to valuation procedures, value, property description, residential applications, commercial applications, improvement construction, home inspection, and appraisal math.

**RE-238 Real Estate Appraisal III**  
3 credits, not offered every year

Course offers a basic understanding and knowledge of the residential sales comparison and income approaches to appraisal. It includes the valuation principles and procedures applicable to both approaches.

**RE-244 Market Analysis/Highest and Best Use**

1 credit, not offered every year  
Identifying and analyzing market forces affecting the buyer's and seller's behavior is a key factor in understanding and reporting values. Designed to give students the tools needed to properly collect and analyze market data.

**RE-245 Residential Site Valuation and Cost Approach**

1 credit, not offered every year  
Help students gain valuable insight and a working knowledge of the various theories and methodologies for arriving at residential site values and applying the Cost Approach in residential appraising. Advantages/disadvantages of using the Cost Approach and distinction between Replacement Cost new and Reproduction Cost New.

**RE-246 Residential Report Writing**  
1 credit, not offered every year

Introduces theories, techniques, and procedures to help understand the process and how to use various residential forms and reports for appraisal. Provides practical application of real estate appraisal report writing procedures through theory and hands-on examples of appraisal processes.

**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

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. Prerequisite: 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. Prerequisite: RET-209.

**RET-213 Renewable Energy III: Installation and Maintenance**  
3 credits, Fall

The third in a series of technical courses, RET 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. Prerequisite: 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. Prerequisite: 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. Prerequisite: RET-215.

**RET-240 Alternative Fuels**  
4 credits, Fall

Offers students familiarity and entry levels 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 and 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 employer/supervisor. Required: Instructor consent and a CWE seminar.

**SBM**

Courses with this prefix will not transfer to a four-year institution.

***Small Business Management*****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

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

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 III**  
0 credit, Fall

Part 3 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 integrating strategies and business growth.

**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 testing of a completed device. Microcontamination 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 related to 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. Required: Instructor consent and a CWE seminar.

**SOC****Sociology****SOC-204 Introduction to Sociology**  
4 credits, Fall/Winter/Spring

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**SOC-205 Social Stratification and Social Systems**  
4 credits, Fall/Winter/Spring

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**SOC-206 Institutions and Social Change**

4 credits, Fall/Winter/Spring

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 social change will be examined. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**SOC-210 Marriage, Family & Intimate Relations**

4 credits, not offered every term

Introduces 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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**SOC-225 Social Problems**

4 credits, not offered every term

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**SOC-280 Sociology/CWE**

2-6 credits, Fall/Winter/Spring

Provides students with on-the-job work experience in the field of sociology. Required: Instructor consent & a CWE seminar.

**SP****Speech**

See COMM-Communication Studies.

**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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**SPN-102 First-Year Spanish II****4 credits, 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.

**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.

**SPN-201 Second-Year Spanish I****4 credits, Fall**

First of a three-term intermediate, multimedia course. Concentration 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. Concentration 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. Concentration 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, Fall**

Emphasis will be to continue to develop oral proficiency beyond that achieved by the end of the second year of Spanish including expanding vocabulary and broadening the student's cultural awareness of the Spanish-speaking world. Grammatical explanations will be kept to a minimum. Prerequisite: Pass SPN-203 or instructor consent.

**SPN-212 Intermediate Spanish****Conversation****3 credits, Winter**

Emphasis will be to continue to develop oral proficiency beyond that achieved by the end of the second year of Spanish including expanding vocabulary and broadening the student's cultural awareness of the Spanish-speaking world. Grammatical explanations will be kept to a minimum. Prerequisite: Pass SPN-203 or instructor consent.

**SPN-213 Intermediate Spanish****Conversation****3 credits, Spring**

Emphasis will be to continue to develop oral proficiency beyond that achieved by the end of the second year of Spanish including expanding vocabulary and broadening the student's cultural awareness of the Spanish-speaking world. Grammatical explanations will be kept to a minimum. Prerequisite: Pass SPN-203 or instructor consent.

**SPN-280 Spanish/CWE****2-6 credits****Fall/Winter/Spring/Summer**

Cooperative work experience. Offers variable credit to students using Spanish on-the-job. Required: Instructor consent & a CWE seminar.

**SSC****Social Science****SSC-160 Faith & Reason****5 credits, not offered every term**

Introduction to classical philosophy, sacred texts, modern fiction, poetry, theology, evolutionary biology, and cosmology. Consideration of how personal concepts of faith and reason and institutions of science and religion, shape personal intellectual landscapes. Recommended: Pass RD-090 or placement in RD-115.

**SSC-170 Metamorphoses****5 credits, not offered every year**

Investigates the process of change within human cultures and individuals. By exploring myth, science, art, religion, and literature, we approach a better understanding of the ability of humans to change. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-180 Pathway to Sustainability****5 credits, Fall**

Can we create a more sustainable and just world? Will we question our assumptions regarding economic models, democracy, our relationships with the environment, and social structures? What are the roots of the current ecological crisis? Recommended: Pass RD-090 or placement in RD-115.

**SSC-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? Recommended: Pass RD-090 or placement in RD-115.

**SSC-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? Recommended: Pass RD-090 or placement in RD-115.

**SSC-233 Electronic Culture**  
4 credits, not offered every term

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-235 Perspectives on Terrorism**  
4 credits, not offered every term

Explores the ways in which different academic disciplines in the social sciences and humanities construct historical, psychological, cultural, theological, sociological, and philosophical arguments and themes around the topic of terrorism and terrorist-related issues. Identifies underlying assumptions upon which these arguments and themes are based and considers the cultural expressions they both engender and reflect. Prerequisites: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-240 American Military Conflict: Total War**  
4 credits, not offered every term

Provides students with the fundamental knowledge of the politics and geography of United States military operations when conducting "Total War" as applied in conflicts from The Civil War through WWII. Recommended: Pass RD-090 or placement in RD-115.

**SSC-241 The American Military Conflict: The Cold War**  
4 credits, not offered every term

Provides students with the fundamental knowledge of the politics and geography of United States military operations when conducting "The Cold War" as applied in conflicts in Korea, Vietnam and the planned defense of Western Europe. Recommended: Pass RD-090 or placement in RD-115.

**SSC-242 The American Military Conflict: The War on Terror**  
4 credits, not offered every term

Provides students with the fundamental knowledge of the politics and geography of United States military operations when conducting "The War on Terror" as applied in conflicts in Libya, Iraq, Afghanistan, and various other parts of the world. Recommended: Pass RD-090 or placement in RD-115.

**TA**

**Theatre Arts**

**TA-101 Appreciation of Theatre Arts**  
4 credits, not offered every year

Students will be introduced to basic aspects of theatre arts by attending several productions. Plays are reviewed and evaluated in written form and in group discussion. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**TA-102 Appreciation of Theatre Arts**  
4 credits, not offered every year

Students will analyze aspects of theatre arts at an intermediate level by attending several productions. Plays are reviewed and evaluated in written form and in group discussion. Recommended: Pass RD-090 or placement in RE-115; pass WR-095 or placement in WR-121.

**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.

**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.

**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.

**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. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 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. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 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. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass TA-141 or TA-142 or instructor's consent.

**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 performances. Required: Instructor consent and successful audition. Can be repeated for up to 6 credits.

**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 improv, 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 Mainstage production. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-111, TA-112 and TA-113.

**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 Mainstage production. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-111, TA-112 and TA-113.

**TA-213 Technical Theatre Study****4 credits, Spring**

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 Mainstage production. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-111, TA-112 and TA-113.

**TA-241 Shakespeare for Actors****4 credits, not offered every year**

Explore character development and performance with particular emphasis on style, genre, language and rhythm. Lecture, discussion and student presentations based on select texts. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-141, TA-142 and TA-143.

**TA-242 Acting Techniques: Scene Study****4 credits, not offered every year**

An overview of Western theater history from the time of the Greeks to the present. Lecture, discussion and student presentation, including performances from selected scenes, will be used to explore each era of theatre. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-141, TA-142 and TA-143.

**TA-243 Play Direction****4 credits, not offered every year**

Theory, philosophy and practice of play directing. Casting and rehearsal of players, production organization, script analysis and scene building. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-141, TA-142 and TA-143.

**TA-253 Theatre Rehearsal/Performance****1-3 credits, Fall/Winter/Spring**

Training in theatre production through intensive study and rehearsal of scenes and plays for public performances. Required: Instructor consent and successful audition. Can be repeated for up to 6 credits.

**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. Required: Instructor consent & a CWE seminar.

**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 improv, stand-up comedy, and student directed one-act plays. Required: Instructor consent and successful audition. 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 CDL, 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 vehicle basics, including backing, visual search, shifting, turning, space and speed management.

**TTL-124 Fundamentals of Material Handling and Logistics****4 credits, not offered every term**

Fundamental concepts of materials handling tools, equipment, techniques and logistics. Emphasis on efficiency of movement and storage, and importance of control and protection. Includes a facility tour and viewing web resources. Recommended: Pass RD-080 or placement in RD-090.



**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.

**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 certificate or degree. Introduction to the fundamentals of wastewater treatment plant operation. 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 bacteriology, and introduction to water disinfection.

**WET-020 Wastewater Operations II**  
3 credits, Winter

For professional upgrade only. Does not meet the requirements for the certificate or degree. Secondary wastewater treatment alternatives with municipal application. Fixed and suspended film systems and clarification process. Includes biological sludge treatment. Prerequisite: Pass WET-010.

**WET-021 Waterworks Operations II**  
3 credits, Winter

For professional upgrade only. Does not meet the requirements for the certificate or degree. Basic hydrology, ground water and surface water sources, well construction and operation, introduction to water chemistry, waterworks hydraulics, and fundamentals of pumps and pumping. Prerequisite: Pass WET-011.

**WET-030 Wastewater Operations III**  
3 credits, Spring

For professional upgrade only. Does not 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. Prerequisite: Pass WET-020.

**WET-031 Water Treatment**  
3 credits, Spring

For professional upgrade only. Does not meet the requirements for the certificate or degree. Design, operation, and process control of water treatment plants. Includes water chemistry, related math, coagulation, sedimentation, filtration, and disinfection. Review for Oregon Operator certification exams. No lab requirement for this course. Prerequisite: Pass WET-021.

**WET-109 Backflow Assembly  
Operation and Testing**  
3 credits, Fall/Winter/Spring/Summer

A 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 operations. Includes collections systems, preliminary and primary treatment, waste characteristics including organic removals, and solids profiles. Prerequisite: Pass MTH-065 or placement in MTH-080. 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 bacteriology, and introduction to water disinfection. Prerequisite: Pass MTH-065 or placement in MTH-080. Corequisite: MTH-082B.

**WET-120 Wastewater Operations II**  
3 credits, Winter

Secondary wastewater treatment alternatives with municipal application. Fixed and suspended film systems and clarification process. Prerequisite: Pass WET-110. 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. 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. 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. Prerequisite: Pass CH-104.

**WET-125 High Purity Water Production I****3 credits, not offered every year**

Introduction to the production of high purity water for the semiconductor, pharmaceutical, and electric power generating industries. Fundamentals of high purity water chemistry, reverse osmosis treatment, ion exchange treatment, electrodeionization treatment, UV, ozonation, degasification, and microfiltration. Prerequisite: Pass CH-104. 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 to biological sludge handling and processing. Lab includes field trips to local wastewater facilities. Prerequisite: Pass WET-120.

**WET-131 Water Treatment****4 credits, Spring**

Design, operation, and process control of water treatment plants. Includes water chemistry, coagulation, sedimentation, filtration, and disinfection procedures. Review for Oregon Operator certification exams. Lab includes field trips to local water treatment facilities. Prerequisite: Pass WET-121.

**WET-132 Collection & Distribution Lab****1 credit, Spring**

Provides student with field exposure to water distribution systems and wastewater collection systems. Weekly field visits include cross-connection inspection, distribution valving, reservoirs, water metering/repair, pumping station operations, smoke testing, and CCTV.

**WET-134 Environmental Chemistry II****2 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.

**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.

**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 Seminar.

**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.

**WET-242 Hydraulics/Water & Wastewater****3 credits, Fall**

Study of closed conduit and open channel flow. Includes hydrostatics, head-loss, pump characteristics, Bernoulli's and the energy equations, and basic characteristics of water. Prerequisite: Pass MTH-065 or placement in MTH-080.

**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 experience in a municipal, public or private wastewater treatment plant of specific activated sludge design. Process loading criteria, data acquisition, trend charting, and relevant process strategies will be addressed. Corequisite: Inclusive CWE Seminar.

**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**

Many of these classes can be customized to meet the needs of the industry. For additional information on a customized class for your company, contact the Customized Training Department at 503-594-3199.

**WLD-007A AWS Certification 1 Plate Test****0 credit, Fall/Winter/Spring/Summer**

Welder certification in accordance with AWS D1.1 for one position for students enrolled in any CCC welding course. City card upon request. Required: Instructor consent.

**WLD-007B AWS Certification 2 Plate 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. City card upon request. Required: Instructor consent.

**WLD-007C AWS Certification Pipe Test****0 credit, Fall/Winter/Spring/Summer**

Welder certification on pipe in accordance with AWS D1.1 for students enrolled in any CCC welding course. City card upon request. Required: Instructor consent.

**WLD-100 Welders' Print Reading I**  
3 credits, Fall/Winter

Provides instruction in reading and interpretation of sketches and prints common in the welding industry. Interpretation of conventional drafting symbols, welding symbols, development of basic shop drawings and projects.

**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

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**  
1-4 credits, Fall/Winter/Spring

Provides theory and practical instruction in welder certification. Choose FCAW, SMAW, or GTAW for certification. May be repeated for up to 11 credits.

**WLD-111 Shielded Metal Arc Welding (Stick)**  
8 credits, not offered every term

Provides students with the opportunity to acquire knowledge and skills to perform fillet and groove welds in all positions with the SMAW process. Oxy-fuel cutting, air carbon arc cutting and gouging also covered.

**WLD-111A Shielded Metal Arc Welding (Stick)**  
4 credits, not offered every term

Part one of WLD-111 which provides opportunity to acquire knowledge and skills to perform fillet and groove welds in flat and horizontal positions with the SMAW process.

**WLD-111B Shielded Metal Arc Welding (Stick)**  
4 credits, not offered every term

Part two of WLD-111 with additional opportunity to perform various welds in vertical and overhead positions with the SMAW process. Prerequisite: Pass WLD-111A.

**WLD-112 Introduction to Shielded Metal Arc Welding Pre-Pipe Welding**  
2 credits, Fall/Winter/Spring

Provides beginning theory and practical instruction in SMAW in preparation for pipe welding. Stringer, fillet, root groove welds on plate and oxy-fuel cutting will be covered. Prerequisite: Pass WLD-111 or Pass WLD-111A and WLD-111B, Pass WLD-150 or prior experience in SMAW.

**WLD-113 Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)**  
8 credits, not offered every term

Acquire knowledge and skills to perform fillet and groove welds in all positions with GMAW and FCAW. Oxy-fuel and plasma cutting also covered.

**WLD-113A Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)**  
4 credits, not offered every term

Part one of WLD-113 which provides the opportunity to acquire knowledge and skills to perform fillet and groove welds in flat and horizontal positions with GMAW and FCAW processes. Oxy-fuel and plasma cutting also covered.

**WLD-113B Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)**  
4 credits, not offered every term

Part two of WLD-113 which provides additional knowledge and skills to perform fillet and groove welds in vertical and overhead positions with the GMAW and FCAW processes. Prerequisite: Pass WLD-113A.

**WLD-115 Gas Tungsten Arc Welding (GTAW)**  
8 credits, not offered every term

Acquire knowledge and skills to perform fillet and groove welds in various positions on steel, stainless steel and aluminum with the GTAW process. Plasma cutting also covered.

**WLD-115A Gas Tungsten Arc Welding (GTAW)**  
4 credits, not offered every term

Part one of WLD-115 which provides opportunity to acquire knowledge and skills to perform fillet and groove welds in flat and horizontal positions on steel, stainless steel and aluminum with the GTAW process.

**WLD-115B Gas Tungsten Arc Welding (GTAW)**  
4 credits, not offered every term

Part two of WLD-115 which provides additional opportunity to perform various welds in vertical and overhead positions on steel, stainless steel and aluminum with the GTAW process. Prerequisite: Pass WLD-115A.

**WLD-150 Welding Processes**

4 credits, Fall/Winter/Spring/Summer  
Covers oxy-acetylene welding, brazing, cutting, stick welding, wire feed, oxy-fuel and plasma cutting. Includes: safety, electrical fundamentals, routine maintenance, minor repairs, and terms and definitions.

**WLD-200 Welders' Print Reading II**  
3 credits, Spring

Provides instruction in reading and interpretation of sketches and prints common in the welding industry. Interpretation of basic shop drawing views and projections. Includes basic layout and math review. ISO and AWS symbols and weld joints are covered. Recommended: Completion of WLD-100.

**WLD-203 Blacksmithing & Traditional Iron Working II**  
2 credits, Fall/Winter/Spring

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-205 Structural Steel Inspection, Code and Standards**

4 credits, not offered every term

Teaches students a systematic method in the application and understanding of the Structural Steel Welding Code. Develop technical and hands-on knowledge necessary for reading and understanding AWS Structural Steel Welding Code, inspection techniques, Non-Destructive Testing (NDT), manufacturing and construction practices.

**WLD-210 Beginning Shielded Metal Arc Welding Pipe Welding**

2 credits, Fall/Winter/Spring

Provides an opportunity to acquire knowledge and skills to perform open root groove welds on plate and pipe using E6010 and E7018. Oxy-fuel pipe cutting is included. Prerequisite: Pass WLD-112.

**WLD-211 Advanced Shielded Metal Arc Welding**

4 credits, not offered every term

Acquire knowledge and skills to perform groove welds in all positions using the SMAW process. Cutting and gouging processes, advanced welding theory, and AWS welding procedures are included. Prerequisite: Pass WLD-111 or Pass WLD-111A and WLD-111B.

**WLD-212 Shielded Metal Arc Welding Pipe Welding**

2 credits, Fall/Winter/Spring

Provides theory and practical instruction in open root V groove pipe welding using E6010 and E7018 electrodes. Oxy-fuel pipe cutting will be included. Prerequisite: Pass WLD-211.

**WLD-213 Advanced Gas Metal Arc Welding /Flux-Core Arc Welding**

4 credits, not offered every term

Acquire knowledge and skills to perform groove welds in all positions using the GMAW and FCAW processes. Industrial-cutting processes, advanced welding theory and AWS welding procedures are included. Prerequisite: Pass WLD-113 or Pass WLD-113A and WLD-113B.

**WLD-215 Advanced Gas Tungsten Arc Welding**

4 credits, not offered every term

Acquire knowledge and skills to perform welds in all positions on plain carbon steel, stainless steel and aluminum using the GTAW process. Industrial cutting processes, advanced welding theory and AWS welding procedures are included. Prerequisites: Pass WLD-115 or Pass WLD-115A and WLD-115B.

**WLD-230 CNC Press Brake**

3 credits, not offered every term

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.

**WLD-250 Welding Fabrication I Beginning Project**

4 credits, not offered every term

Instruction in fabrication techniques including blueprint reading, layout, sketching, bills of material, job cost calculations, measuring, fitting, cutting and welding. Beginning projects will be assigned. Prerequisite: Pass WLD-111, WLD-113 or WLD-115.

**WLD-251 Welding Fabrication II Intermediate Project**

4 credits, not offered every term

Students will be assigned intermediate fabrication projects based on skills learned in WLD-250 Welding Fabrication I Beginning Project. Prerequisite: Pass WLD-250.

**WLD-252 Welding Fabrication III Advanced Project**

4 credits, not offered every term

Students will use techniques from WLD-250 Welding Fabrication I Beginning Project and WLD-251 Welding Fabrication II Intermediate Project to build advanced projects. Students will be responsible for managing their projects to completion. Prerequisite: Pass WLD-251.

**WLD-261 Welding Special Projects**

1-2 credits

Fall/Winter/Spring/Summer

Allows students to improve their welding skills while working on instructor-approved projects. May be repeated for 9 credits.

**WLD-280 Welding Technology/CWE**

1-6 credits

Fall/Winter/Spring/Summer

Work-based learning experience in the welding trades. Coordination of instruction will occur with industry and the CWE department. Required: Instructor consent and a CWE seminar.

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**WR****Writing****WR-080 Basic Writing Skills**

3 credits, Fall/Winter/Spring

Emphasizes paragraph development for native English speakers who wish to enhance basic writing skills. Grammar and punctuation are addressed in class and in a lab setting. Prerequisite: Placement in WR-080.

**WR-090 Fundamentals of English**

3 credits, Fall/Winter/Spring

Writing confidently and solving problems in grammar, punctuation, and usage. Prerequisite: Pass WR-080 or placement in WR-090.

**WR-095 Paragraph to Essay**

3 credits, Fall/Winter/Spring/Summer

Preparatory study for transfer writing courses, with emphasis on paragraph construction and short papers. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-090 or placement in WR-095.

**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 RD-090 or placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121.

**WR-121 English Composition**  
4 credits, Fall/Winter/Spring/Summer

Introduces the academic essay: analyzing and developing a topic, writing grammatically correct and organized essays, reading professional writing, and applying writing techniques to a range of academic essay styles. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121.

**WR-122 English Composition**  
4 credits, Fall/Winter/Spring/Summer

Major principles of argumentation and persuasion. Analyzing and writing persuasive essays. Finding, using, and documenting sources. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-121 with a C or better.

**WR-123 English Composition**  
3 credits, Fall/Winter/Spring/Summer

Writing the longer academic research paper: format and style, advanced research techniques, and organizational skills. Recommended: Pass RD-090 or placement in RD-115. Prerequisites: Pass WR-122.

**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/Winter/Spring

Guides students through the discussion and practice of writing creatively in many genres, primarily poetry, fiction, drama, and creative nonfiction in a workshop format. May also include screenwriting, film, and performance genres. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**WR-146 Publishing Chapbooks**  
1 credit, not offered every year

Editing, preparing, and printing individual student chapbooks (poetry, fiction, creative nonfiction, or drama). Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**WR-222 English Composition**  
4 credits, not offered every year

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 RD-090 or placement in RD-115. Prerequisite: Pass WR-121 & pass WR-122.

**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 RD-090 or placement in RD-115. Prerequisite: Pass WR-121 with a C or better.

**WR-239 Creative Nonfiction Intensive**  
1 credit, not offered every year

Techniques of developing and editing creative nonfiction (personal essays, memoirs, and literary journalism). Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**WR-240 Creative Writing: Nonfiction**  
4 credits, not offered every term

Techniques of writing and analyzing types of creative nonfiction such as literary journalism, memoirs, nature or science writing and personal essays. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121 or instructor consent.

**WR-241 Creative Writing: Fiction**  
4 credits, Fall/Winter

Techniques of creative writing and the development of critical appreciation of the art of writing fiction. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121 or instructor consent.

**WR-242 Creative Writing: Poetry**  
4 credits, Fall/Winter

Techniques of poetry writing. Analysis of the craft of poetry in traditional and non-traditional forms. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-095 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 RD-090 or placement in RD-115. Prerequisite: Pass WR-095 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 of writing fiction. Recommended: Pass RD-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. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-242 or instructor consent.

**WR-246 Advanced Creative Writing: Editing & Publishing**  
4 credits, Winter/Spring

For students with an interest in creative writing and/or literary journal design, layout, and publication who wish to develop editing and publishing skills. Includes the production of a literary journal. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-240, WR-241, WR-242, WR-243, or WR-262 or instructor consent.

**WR-249 Publishing on Land and Online**

1 credit, not offered every year

For students with previous writing experience who wish to learn the advantages and disadvantages of publishing online and on land. Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**WR-262 Introduction to Screenwriting**  
4 credits, Fall/Spring

Explores the fundamentals of screenplay composition through the use of various writing exercises and workshop techniques. Discussion of dramatic structure and the elements of good storytelling. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121 or instructor consent.

**WR-270 Food Writing**  
4 credits, Fall

Learn to write uniquely and powerfully about food, from reviews to memoir and personal narrative. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**WR-279 Issues in Poetry Writing**  
1 credit, not offered every year

Techniques of writing poems, with particular focus on a key issue such as the use of imagery, rhythm, or form. Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**Z-202 General Zoology**  
4 credits, not offered every year

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**Z-203 General Zoology**  
4 credits, not offered every year!!

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 RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

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**WS*****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 RD-090 or placement in RD-115.

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**Z*****Zoology*****Z-201 General Zoology**  
4 credits, not offered every year

A lab course offering cellular and molecular basis of animal life including genetics, evolution, systematics, and protozoan diversity. Recommended: Pass MTH-095 with a C or better or placement in MTH-105 or MTH-111; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

# Faculty & Administration



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

**CLACKAMAS COMMUNITY COLLEGE  
BOARD OF EDUCATION**

	Term ends
<b>Ron Adams</b>	2015
<b>Jean Bidstrup</b>	2013
<b>Greg Chaimov</b>	2013/15
<b>Judy Ervin</b>	2013
<b>Chris Groener</b>	2013
<b>Richard Oathes</b>	2013
<b>Jane Reid</b>	2013

**CLACKAMAS COMMUNITY COLLEGE  
PRESIDENT**

**Dr. Joanne Truesdell**

**2013-14  
FACULTY & ADMINISTRATION**

- 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./MIP 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
- Arter, David B. (1986)**  
Physical Science  
B.A. University of California  
Ph.D. University of Illinois
- Bachmann, Anne B. (2000)**  
English as a Second Language  
B.A. Portland State University  
M.A. Portland State University
- Baker, Nancy C. (1987)**  
Skills Development  
B.A. Indiana University  
M.A. University of Oregon
- Baratto, Stefan (2000)**  
Mathematics  
B.G.S. University of Michigan  
M.S. University of Oregon
- Beining, Steven (2008)**  
Distance Learning  
B.A. University of Wisconsin  
M.S. Portland State University
- Bello, Chippi S. (2006)**  
Director, Financial Aid  
B.S.W. Brigham Young University  
M.S. Ed. Portland State University
- Bjerre, Irma C. (2000)**  
Foreign Language  
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
- Blessman, David G. (1998)**  
Customized Training & Development  
B.S. Portland State University  
M.S. Ed. Portland State University
- Bostrom, Gregory A. (2010)**  
Physics  
B.S. Northwest Missouri State University  
M.S. University of Illinois at Chicago  
M.S. Portland State University
- Bown, Jennifer P. (2003)**  
Life Science  
B.S. University of Nevada, Reno  
M.S. University of Nevada, Reno
- Bradbury, Sue A. (2006)**  
Nursing  
B.S.N. Keuka College  
M.S.N. University of Phoenix
- 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
- Briare, William V. (2005)**  
Dean, Arts & Sciences  
B.S. University of Nevada  
M.A. Mt. Angel Seminary
- 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
- Burnell, Carol H. (2004)**  
English  
B.A. San Francisco State University  
M.A. Portland State University
- Caldera, Sue J. (2004)**  
Welding Technology  
Welding Certificate, Mt. Hood  
Community College
- Campbell, Robert D. (2012)**  
Director, Small Business Development  
Center  
B.S. Marylhurst University
- Cannon, Barbara L. (2006)**  
Nursing  
B.S.N. Montana State University  
M.N. Oregon Health & Science  
University
- Carey, Kimberley L. (2005)**  
Dean, Chief Information Officer  
B.S. University of Idaho
- 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
- Christensen, Kathryn (2006)**  
Business  
B.A. Portland State University  
M.B.A. Marylhurst University  
PMP Certification
- Clarke, Jaime L. (2012)**  
CASE Grant Project Director  
M.A. Gonzaga University
- Clem, Pam (2007)**  
Customized Training & Development  
B.S. Eastern Oregon University  
M.S. Eastern Oregon 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

**Cornelius, Trista G. (2002)**

English  
B.A. Pacific University  
M.A. Portland 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. Sonoma State University  
M.S. Oregon Health & Science University

**Donnelly, Taylor E. (2012)**

English  
Ph.D. University of Oregon

**Donnelly, Tracy L. (2011)**

Director, Health Sciences  
B.S. Southern Oregon University  
M.P.H. University of Nevada, Las Vegas

**Edwards, Marsha E. (2010)**

Dean, Human Resources  
B.S. Oregon State University  
M.A. University of Phoenix

**Eikrem, James H. (2012)**

Theatre Arts  
M.F.A. New York University

**Fitzgerald, Greg A. (2012)**

Executive Director, Foundation  
M.S. Oregon State University

**Fiskum, Paul K. (1976)**

HPE/Assistant Men's Basketball Coach  
B.S. Oregon College of Education  
M.S. Portland 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

**Francis, Eden A. R. (2003)**

Chemistry  
A.A.S. Cottey College  
B.S. Linfield College  
M.S. University of Oregon

**Geiger, Darlene J. (2012)**

Associate Dean, Academic Foundations  
& Connections  
B.S. University of Wisconsin  
M.S. Portland State University

**Giltz, R. Scott (2003)**

Dean, Technology, Health Occupations  
& Workforce  
A.A.S. Clackamas Community College  
B.S. Eastern Oregon University

**Goldstein, Alice (2000)**

English as a Second Language  
B.A. Stanford University  
M.A. Portland State University  
J.D. University of California, Berkeley

**Gray, S. Kate (1992)**

English  
B.A. Williams College  
M.F.A. University of Washington

**Grimaldi, Hugo L. (1997)**

Business  
B.S. Loyola Marymount University  
of Los Angeles  
M.B.A. University of Portland

**Hall, Adam L. (1998)**

Mathematics  
B.S. Portland State University  
M.S. Portland State University

**Halliday, Karen L. (2000)**

Library  
B.A. University of Washington  
M.S. University of Washington  
M.L.S. University of Washington

**Hamel, Nicolas N. (1999)**

Physical Science  
B.S. Oregon State University  
Ph.D. Portland State University

**Harber, Renee M. (2004)**

Horticulture  
B.S. Ball State University  
Ph.D. Oregon 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
- 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
- Hoyt, H. Ray (2007)**  
Director, Customized Training  
& Development  
B.S. Oregon State University  
M.Ed. Oregon State University  
M.F. Oregon 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
- Isham, Suzanne E. (2013)**  
Director, Campus Safety  
B.A. Southern Oregon University  
Public Management Certificate,  
Willamette 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
- Junquera-Santana, Henry C. (2004)**  
Foreign Language  
B.A. San Diego State University  
M.A. San Francisco State University  
M.B.A. National University
- 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
- Kop, Barry K. (2005)**  
Life Sciences  
B.S. University of Oregon  
B.A. University of Washington  
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
- Laugle, Thomas N. (1990)**  
Wildland Fire/ESH  
A.A. Clackamas Community College  
A.A.S. Portland Community College  
B.A. Marylhurst University
- Lee, Eric F. (2012)**  
Engineering Science  
Ph.D. Cornell 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 Fullerton  
Ph.D. University of Nevada
- 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
- Loewen, Carrie J. (2012)**  
Manager, Human Resources  
A.A.S. Parkland College  
A.S. Portland Community College  
B.S. Portland State University  
M.A. Lewis and Clark College
- Lundy, Elizabeth L. (2009)**  
Vice President, Instruction & Student  
Services  
Vice Provost  
B.S. University of Nebraska  
M.S. Oregon 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
- Marks, Brenda A. (1995)**  
Student Life & Leadership  
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)**  
Life 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)**  
HPE/Head Track and Field & Cross  
Country Coach  
B.S. Western Oregon University  
M.S. Ed. Western Oregon University

**Meuser, Ellis D. (2004)**  
Mathematics  
B.Th. Northwest Christian College  
M.S. Western Oregon University

**Milldrum, Jennifer (2011)**  
Student A/R Accounts Manager, Bursar  
B.S. Portland State University



**Miller, David W. (1998)**  
Foreign Language  
B.A. University of Montana  
B.A. Portland State University  
M.A. Portland State University

**Miller, Nick A. (2003)**  
Automotive Technology  
A.A.S. Clackamas Community College

**Mingo, Andrew S. (2004)**  
English/Digital Multimedia  
Communications  
B.A. University of Nevada  
M.F.A. San Diego State University

**Moller, Steffen A. (2007)**  
Dean, Curriculum, Planning &  
Research  
B.A. Union College  
M.A. Andrews University

**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  
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, Bruce A. (1998)**  
Horticulture  
B.A. University of Pennsylvania  
M.S. Washington State University

**Nelson, Tracy M. (2004)**  
HPE  
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

**Ogden, Rebecca S. (1996)**  
Skills Development  
B.S. Portland State University  
M.S. Southern Oregon State College

**Parini-Runge, Shelly A. (2006)**  
Dean, College Advancement  
B.A. Arizona State University  
M.A.I.S. Marylhurst University

**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)**  
Anatomy & Physiology  
B.S. University of Michigan  
M.S. University of Michigan

**Paulson, Janet A. (2012)**  
Manager, Marketing  
B.A. University of Oregon

**Phelps, John L. (2011)**  
Welding  
A.A.S. Clackamas Community College

**Pirie, Melissa S. (2011)**  
Director, Student & Academic Support  
Services  
B.S. Portland State University  
M.Ed. Portland State University

**Reilly, Nicole L. (2002)**  
Nursing  
B.S.N. Clemson University  
M.N. University of Washington

**Rhoden, Josh G. (2006)**  
HPE/Head Wrestling Coach  
A.A. Clackamas Community College  
B.A. Pacific University  
M.A. Pacific University

**Risan, Cynthia A. (2010)**  
Associate Dean, Technology, Health  
Occupations & Workforce  
B.A. University of Idaho  
M.S. Capella University

**Rizzo, Christopher M. (2010)**  
Manufacturing Technology  
B.F.A. Rochester Institute of Technology

**Robinson, Robin A. (1989)**  
HPE/Head Baseball Coach  
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
- Rueb, Richard R. (1995)**  
Life Science  
B.S. University of South Dakota  
M.S. Rutgers University
- Ryan, Joan S. (1994)**  
Business  
B.S. Southern Oregon State University  
M.S. Oregon State University  
M.B.A. Oregon State 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  
CADC I
- Schneider, Karen T. (2001)**  
Nursing  
Nursing Diploma, St. Vincent School  
of Nursing  
B.S.N. Oregon Health & Science  
University  
M.S. University of Portland
- Schulz, Polly A. (2007)**  
Biology  
B.A. University of Oregon  
M.S. University of Oregon
- Shackelford, Alan M. (2002)**  
Economics  
B.S. Portland State University  
M.S. Portland State University
- 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, Michelle J. (2002)**  
Nursing  
B.S.N. University of Portland  
M.S. University of Portland
- Smith, Vicki M. (2006)**  
Development Officer
- Smith, Yvonne M. (2006)**  
Education & Human Services  
B.S. University of Oregon  
M.S.W. Portland State University
- Sparks, Rick N. (2011)**  
Director, Technical Services  
B.S. Colorado Christian University  
M.S. Regis University
- Sprehe, Tara L. (2005)**  
Director, Enrollment Management/  
Registrar  
B.A. University of Oregon  
M.S. Miami University
- Terrill, Dawn M. (2012)**  
Early Childhood Education & Family  
Studies  
B.A. Portland State University  
M.A. Portland State University
- Thorn, Carol A. (2002)**  
Nursing  
B.S.N. 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, Wilsonville Training Center  
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
- Vasquez, Andrew A. (2011)**  
Manager, Custodial Services
- 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  
B.S. Marylhurst University
- Wanner, Paul J. (1992)**  
Applied Technology/Wildland Fire  
A.G.S. Clackamas Community College  
A.A.S. Clackamas Community College  
State of Oregon Vocational Certificate  
ASME Certified Senior GDT Professional
- Wasson, Thomas G. (2008)**  
Art  
B.F.A. University of Hawaii  
M.F.A. University of Hawaii
- Waters, William J. (2004)**  
Business  
B.S. Portland State University  
M.B.A. University of Oregon
- Watts, Merrill M. (2011)**  
Small Business Development Center  
B.A. Brigham Young University  
M.B.A. Harvard Business School
- Whitten, Christopher D. (2006)**  
Theatre Arts  
B.S. Western Oregon University
- Wiggins, Patricia A. (2007)**  
English as a Second Language  
A.A. Columbia College  
B.S. University of Missouri  
M.A. Portland State University
- Wilhelm, Roni M. (2006)**  
Manager, Workforce Services Operations
- Wilton, Courtney G. (2007)**  
Vice President, College Services/CFO  
B.S. University of Oregon  
C.P.A. (retired)
- Woods, Kathleen M. (1983)**  
HPE/Head Volleyball Coach  
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

**A**

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