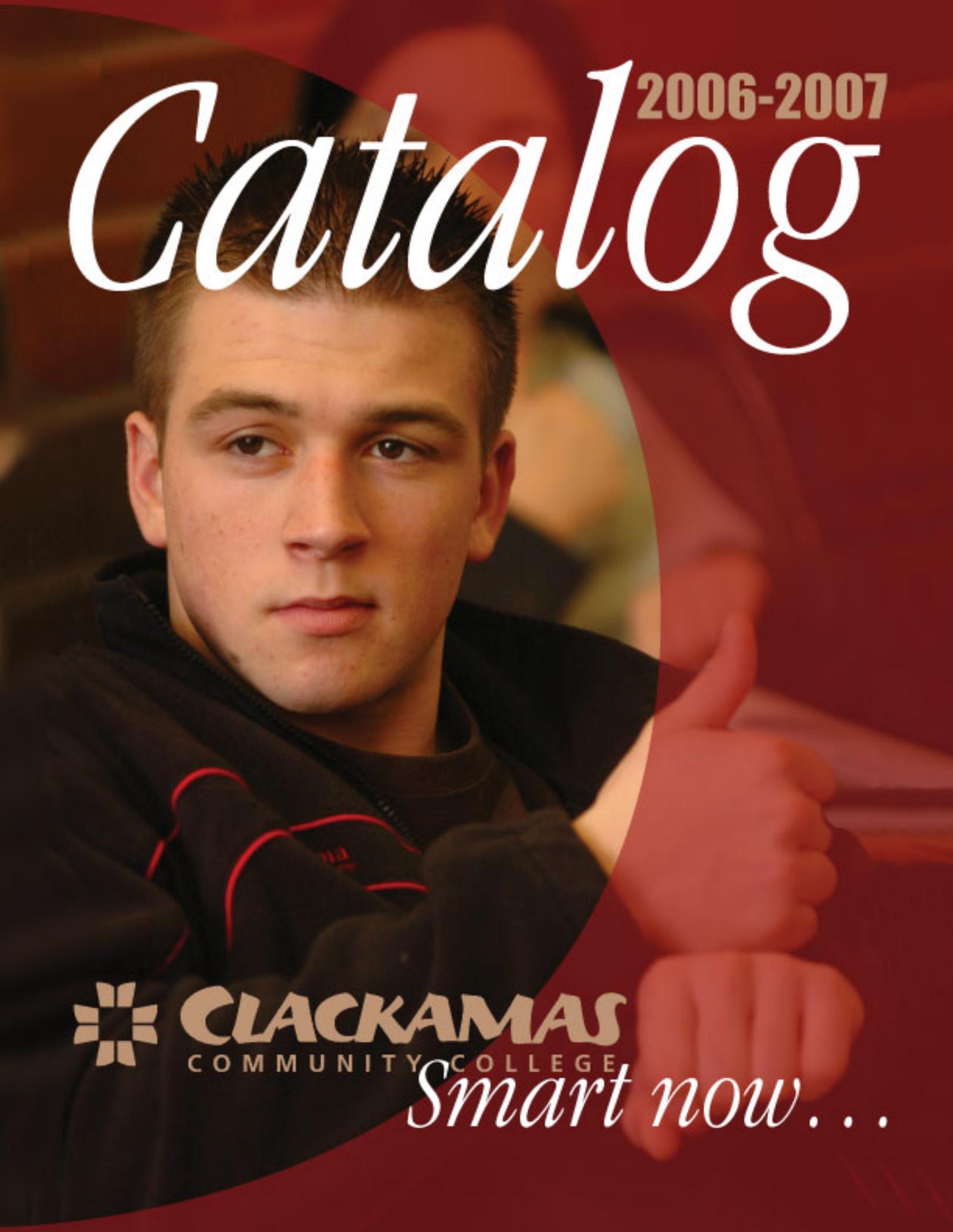


2006-2007

# Catalog



**CLACKAMAS**  
COMMUNITY COLLEGE

*Smart now...*



# *Smart Then...*

As is appropriate for an educational institution, the ideas were launched before there were buildings or even a permanent home.

Clackamas Community College began as a vision in 1962 among a group of dedicated community members. This group worked tirelessly to establish a community college for the benefit of Clackamas County residents, to provide affordable, high-quality academic and vocational education.

The struggle took several years, but a vote on May 24, 1966 marked the birth of what became Clackamas Community College. A hastily assembled office in Oak Grove housed the first President. Evening classes were scheduled at Gladstone High School and 93 students began their college education.

In 1967, the college consolidated to a temporary site in the Red Soils area of Oregon City on Warner-Milne Road. The “library” fit into two boxes for the move. The entire college was transported in one U-Haul truck. The search began for a new home, with voters in 1968 selecting the present Molalla Avenue site as the permanent location for Clackamas Community College.

# *...Smart Now*

Fast forward to 2006. CCC serves more than 26,000 students each year. The Oregon City campus has grown into a hub of educational, student and community activity, and two more campuses (Harmony, in North Clackamas, and the Wilsonville campus) have expanded offerings to a broader geographical base of students.

The community’s support has been invaluable in growing the campus and serving new generations of students. On this, the 40<sup>th</sup> anniversary of a community dream, thousands of students want to say **“thank you.”**



## DATES TO REMEMBER 2006-2007

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

<b>SUMMER TERM</b>	<b>2006</b>
Classes Begin .....	Monday, June 26
Independence Day Holiday (College closed) .....	Tuesday, July 4
Eight-week session ends .....	Thursday, August 17
Eleven-week session ends .....	Thursday, September 7
Labor Day Holiday (College closed) .....	Monday, September 4
<b>FALL TERM</b>	<b>2006</b>
Inservice Week .....	September 18-22
Classes begin .....	Monday, September 25
Veterans' Day Holiday (College closed) .....	Friday, November 10
Thanksgiving Holiday (College closed) .....	Thurs.-Fri., November 23-24
<i>(Wednesday evening classes, beginning at 4 p.m. or later, are canceled prior to Thanksgiving.)</i>	
Finals week .....	December 4-9
Term ends .....	Saturday, December 9
Winter Holiday (College closed) .....	Thurs.-Sun., Dec. 25-26
<b>WINTER TERM</b>	<b>2007</b>
New Year's Day Holiday (College closed) .....	Monday, January 1
Classes begin .....	Monday, January 8
Martin Luther King Jr. Holiday (College closed) .....	Monday, January 15
Skills Contest .....	Thursday, February 22
<i>(Day classes canceled at the Oregon City campus only. Evening classes, beginning at 4 p.m. or later, held as scheduled.)</i>	
Finals week .....	March 19-24
Term ends .....	Saturday, March 24
Spring Break .....	March 26-30
<b>SPRING TERM</b>	<b>2007</b>
Classes begin .....	Monday, April 2
Memorial Day Observance (College closed) .....	Monday, May 28
Finals week .....	June 11-16
GED & Adult High School Diploma Graduation Ceremony .....	Thursday, June 14
College Certificate & Degree Graduation Ceremony .....	Friday, June 15
Term ends .....	Saturday, June 16

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*Clackamas Community College complies with Title VI and VII of the Civil Rights Act of 1964, Equal Employment Act of 1965, Age Discrimination in Employment Act of 1967, Title IX of the Educational Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Vietnam Era Readjustment Assistance Act of 1974, the Americans with Disabilities Act of 1990, the Family Medical Leave Act of 1993, among other State and Federal Laws related to employment. Review and affirmation of college compliance will be held periodically.*

*Clackamas Community College does not discriminate on the basis of race, color, religion, gender, sexual orientation, marital status, age, national origin/ancestry, disability, family relationship or any other protected status in accordance with applicable law. The College's commitment to nondiscrimination applies to curriculum activity and all aspects of operation of the College.*

## *Our Credentials*

Clackamas Community College is accredited by the Northwest Commission on Colleges and Universities (NWCCU). Programs at Clackamas Community College are approved for the education of veterans.

Credits earned in lower-division courses are transferable to public four-year colleges and universities in Oregon. Accreditation documentation is available in the President's Office.

Clackamas Community College's Equal Opportunity Statement ensures that the college does not discriminate on the basis of race, color, religion, gender, sexual orientation, marital status, age, national origin/ancestry, disability, family relationship in any area, curriculum activity, or operation of the college. General inquiries about this policy should be directed to the CCC Vice President of Instructional/Student Services or to the Director of Civil Rights, Department of Education, Seattle, WA. For specific information concerning physical access problems or sign language interpreter service, contact the Director of Counseling at 503-657-6958, ext. 2213.

The information in this catalog reflects current programs, requirements, and costs as of May 2006. These items are subject to change, and Clackamas Community College reserves the right to make any necessary revisions in the information contained here without prior notice. This catalog is designed to provide assistance in program planning, but it does not constitute a legal contract between the student and the college.



*Smart Now...Smart Then.*

*Getting Started*

# 1. Complete an Application for Admission

## General Admission

REGISTRAR'S OFFICE  
ROGER ROOK HALL, 110  
503-657-6958, Ext. 2263

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 under 18 that have not completed high school or yet obtained a GED will be asked to comply with special enrollment requirements. Please see "Under-Age Students" for additional information.

CCC's general application for admission can be found:

- on the CCC website, [www.clackamas.edu](http://www.clackamas.edu)
- at your high school counseling office
- at any of our campuses (Oregon City, Wilsonville or Harmony)

Application materials\* can be submitted at the Enrollment Services Center in Roger Rook Hall at our Oregon City campus or at our other campus locations. They can also be mailed/faxed to:

Registrar's Office  
Clackamas Community College  
19600 South Molalla Avenue  
Oregon City, Oregon 97045-7998  
Fax: 503-722-5864

*\*If you have taken classes at other colleges and would like this course work reviewed for transfer credit at CCC, include official copies of your transcripts with your application for admission or ask the college you previously attended to send a copy of your official transcript to the CCC Registrar's Office. You can request an evaluation of your transfer credit by submitting a Transfer Credit Evaluation Request form to the Registrar's Office.*

## Special Admissions Programs

Some of our programs require special admission processes. If you are unsure about the special admission requirements for a particular program, you can make an appointment to talk with a faculty advisor or a staff member in the Advising & Counseling Center. Please note the following special admission programs, requirements and phone extensions for additional information:

### Adult High School Diploma (AHSD)/ General Educational Development (GED)

Ext. 2595

See page 193, Special Programs.

### Evening and Weekend Programs

Ext. 3108

See page 195, Special Programs.

### Under-Age Students (16-18)

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, ext. 2595.
- To take high school credit recovery classes at CCC that will transfer back to your high school, contact the Dye Learning Center, ext. 2416.
- If you are under 18 and want to take college classes while still in high school contact the Registrar's Office, ext. 2262.
- If you want to earn Advanced College Credit while still in high school, contact your high school counselor or the CCC Advanced College Credit coordinator, ext. 2657.

### CCC/PSU Co-Admission

Ext. 2263

Clackamas Community College offers a co-admission program with Portland State University. Through a special admissions process, students can be admitted to both institutions as they pursue their freshman and sophomore years at CCC. Co-admitted CCC students may take up to six PSU credits each term. Library and computer lab benefits are available at both institutions. Students do not have to pay the formal PSU admission fee until they transfer their junior year. CCC/PSU co-admission information and applications are available on the CCC Oregon City campus at the Advising & Counseling Center, the Registrar's Office, or on the CCC website at [www.clackamas.edu/coadmit/coadmit.htm](http://www.clackamas.edu/coadmit/coadmit.htm)

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

Ext. 2263

Clackamas Community College is approved by the Department of Homeland Security (DHS) to accept qualified students from other countries. International students may be admitted to the college if they have demonstrated proficiency in English by achieving a minimum score of 69 (iBT), 193 (computer), or 523 (paper) on the International TOEFL (Test of English as a Foreign Language). English as a Second Language (ESL) instruction is offered through the Program for Intensive English (PIE) for students *without* a 523 TOEFL score.

Application materials and information are available by going to the CCC web page under International Students.

### *Clinical Lab Assistant/Medical Assistant/ Dental Assistant*

Ext. 2263

Admission to these programs is by a special application process through which students enter a one-year certificate program. Interested students are encouraged to contact the Advising & Counseling Center or the Registrar's Office for more information on specific requirements and application procedures. Applications are available at the Advising & Counseling Center, the Registrar's Office, or on the CCC web page under the *Health Sciences Department* link.

## **FREQUENTLY-ASKED QUESTIONS:**

*When should I apply for admission?*

We recommend that you apply at least one term in advance. The sooner your application is received, the sooner we can help you build your educational plan and keep you informed of important dates and events.

*Should I apply for admission if I'm not quite sure when I will attend?*

Please apply for the term that you think you will be starting your studies. If your plans change, just contact Admissions at ext. 2263 and ask to update your application to another term.

### *Nursing*

Ext. 2263

Admission to the Nursing Program is by a special admission process through which students enter a six-term/two-year program leading to an Associate of Applied Science degree. Interested students are encouraged to contact the Advising & Counseling Center or the Registrar's Office for more information on specific requirements and application procedures. Applications are available at the Advising & Counseling Center, the Registrar's Office, or on the CCC web page under the *Health Sciences Department* link.

## 2.

## *Arrange for Financial Aid*

### *Office of Student Financial Services*

ROGER ROOK HALL, 110  
503-657-6958, Ext. 2745

Clackamas Community College offers a full financial aid program. In 2004-2005, the college awarded \$9.6 million in financial aid to about 2,600 students. You may apply for two kinds of financial aid:

- awards based on financial need; and
- scholarships and grants based on academic achievement, special talents or community service.

Information and applications are available in the Student Financial Services Office and on the financial aid pages on the college website. The Student Financial Services Office can also provide sample loan repayment schedules for Federal Perkins Loans, Federal Stafford Student Loans and Federal PLUS Loans.

Financial aid recipients must maintain at least a 2.0 (C) grade point average while receiving financial aid. Full-time students receiving financial aid must complete 12 or more credits per term. Students enrolled in a two-year degree program are limited to nine terms of full-time enrollment. Students enrolled in a one-year certificate program are limited to five terms of full time enrollment to complete the certificate. Work on concurrent certificates or degrees must also be completed within the time frames stated above.

*Continued*

If you do not maintain a 2.0 GPA, take minimum credit requirements, or attend through 60 percent of the term while receiving federal financial aid (Federal Pell Grants, Federal Supplemental Educational Opportunity Grants, Oregon State Need Grants, Federal Work-Study, Federal Perkins Student Loans, Federal Stafford Student Loans, or Federal PLUS Loans), you may be required to repay some of the aid you've received. Clackamas follows required federal Title IV refund policies. If you've lost your financial aid eligibility and want to have it reinstated, check with the Student Financial Services Office.

The college will use your financial aid award to pay your tuition and fees. If there is money left over, the Business Office will issue you a check for that amount.

For more information about financial aid, please contact the Student Financial Services Office at ext. 2745, or write to: Student Financial Services Office, Clackamas Community College, 19600 South Molalla Avenue, Oregon City, OR 97045-7998.

### *How to apply:*

Complete a Free Application for Federal Student Aid (FAFSA). FAFSAs are available from your high school and from the Student Financial Services Office at CCC. You may also apply on the Web at [www.fafsa.ed.gov](http://www.fafsa.ed.gov). It is important that you indicate Clackamas Community College as one of your schools of choice.

### *Federal & State Financial Aid Programs*

#### **FEDERAL PELL GRANTS**

You may be eligible for up to \$4,050 a year (2006-07), 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 \$1050 a year (2006-07). 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. Awards are renewable for up to four years. 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 COLLEGE 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 PERKINS STUDENT LOANS**

You may be eligible for up to \$2,400 (2005-2006) during your first two years of college. Part-time students (taking 6-11 credits a term) will receive smaller loans. You must begin repaying the loan nine months after you drop below half-time enrollment (under six credits a term). Entrance and Exit Interview counseling sessions are required.

#### **FEDERAL STAFFORD STUDENT LOANS**

Most students are eligible to apply for Federal Stafford Loan funds. The Federal Stafford Loan is a Federally guaranteed loan. First year students (less than 45 credits completed) are eligible to borrow up to \$2,625, and second year students may borrow up to \$3,500 (Actual amount is dependent on student budget criteria.). Entrance below half-time enrollment (less than six credits per term). The Student Financial Services office provides information on our preferred lenders.

#### **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*

Ext. 2745

#### **TUITION NEED WAIVERS**

Clackamas Community College offers one-time tuition waivers each year to students who need assistance. If you're having trouble financing your education, ask the Student Financial Services Office for a tuition need waiver application.

## TAX CREDITS FOR EDUCATION

### **HOPE & LIFETIME LEARNING TAX CREDITS**

The HOPE Scholarship Tax Credit and Lifetime Learning Tax Credit (LLTC) are available to students who attend Clackamas at least half-time (six or more credits) and are enrolled in an eligible course of study. Receipt of grants, scholarships and some forms of untaxed income used to pay tuition and fees will have an impact on the amount eligible to claim as expenses.

Contact a tax preparation specialist or the IRS for clarification on eligible expenses and how to file for these two tax credits.

## Scholarships

Ext. 2373

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

### HIGH SCHOOL SCHOLARSHIPS

Every year the CCC Foundation offers two full-time, 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 Student Outreach, ext. 2455.

### TUITION SCHOLARSHIPS

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

### STUDENT SCHOLARSHIPS

The CCC Foundation funds a number of scholarships for new and returning students. There is one application form to complete for all scholarships, and the application is available late January through mid-March.

### PRIVATE SCHOLARSHIPS

A variety of sources offer private scholarships. These scholarships are displayed in the scholarship rack located in the Community Center.

## Veterans Benefits

Ext. 2554

If you are a Veteran or Reservist, you may be eligible for educational benefits. Benefits may also be available to spouses and dependent children of veterans. You should contact the Veterans Administration or the Veterans Specialist on campus to verify your eligibility.

Students who are interested in using veterans benefits to attend school should plan on starting the necessary paperwork at least two months prior to attendance to avoid delays in receiving benefits. (All educational costs are the students' responsibility and not dependent on receipt of benefits.)

Students receiving benefits must:

- have credits for prior civilian or military training evaluated.

## FREQUENTLY-ASKED QUESTIONS:

*How do I apply for financial aid?*

The first step is to complete the FAFSA (Free Application for Federal Student Aid). You may complete and mail the paper application, or applications may be completed online. The results of the FAFSA are used to determine your eligibility to receive aid. If you list Clackamas Community College on your FAFSA, we will electronically receive your information and contact you for further information.

*Can I apply for financial aid if I am not a full-time student?*

Yes, you may qualify if you register for six or more credits and have filed your FAFSA.

*Is there financial help other than federal financial aid?*

Yes. Clackamas Community College has a wide range of scholarship opportunities for students who are enrolled or planning on enrolling. Some are available for part-time students as well. The open enrollment period for each year is from the end of January to mid-March. There is an application that must be completed and returned for you to be considered. Contact the Scholarship Coordinator, ext. 2373, for more information.

There are also some one-time assistance programs to help students who have special need. Contact the Student Financial Services Office for more information.

*When do I apply for financial aid?*

Awards are made on a first-come, first-served basis so it is important to file your financial aid form as soon as possible after January 1.

- must meet the standards of Satisfactory Progress and maintain at least a 2.0 GPA. (Students who do not meet these guidelines will be placed on probation. If the student does not complete the second term of attendance with a 2.0 GPA, benefits will be terminated under Unsatisfactory Progress.)
- must enroll for the full credit limit on variable credit and open entry/exit classes.
- must follow term schedule and attend all scheduled class meeting times.

# 3. Visit the Testing/ Assessment Center

## Testing/Assessment Center

**ROGER ROOK HALL, 136  
503-657-6958, EXT. 2269**

Check the web site at [www.clackamas.edu/testing/](http://www.clackamas.edu/testing/)  
or call for testing hours.

To be successful in college, it is important to know your current reading, writing, and math skill levels as well as your computer knowledge. Skill levels will be determined by COMPASS, ACT or SAT scores or a combination of these assessments as well as a Computer Placement Assessment.

### PLACEMENT ASSESSMENT IN READING, WRITING AND MATH (COMPASS)

If you have not taken the ACT or SAT and do not have previous writing and/or math courses on a college transcript you will take COMPASS, the placement assessment. Refer to prerequisites or placement requirements for specific courses or programs to determine if this is academically required.

### COMPUTER PLACEMENT ASSESSMENT

If you do not have current computer courses on a college transcript you will take the Computer Placement Assessment. This assessment also fulfills the Computer Literacy requirement for Clackamas Community College. Minimum scores are required.

### ACT OR SAT SCORES

If you have taken the ACT or SAT and your scores are high enough you may be placed based on these scores. If scores are not high enough you will take the placement assessment.

- Bring a copy of your scores to the Testing/Assessment Center to be evaluated

### EVALUATE PRIOR COURSEWORK

If you have taken and passed writing, math or computer courses at another college you may be placed based on previous coursework.

- Bring a copy of your previously attended college transcripts to the Advising & Counseling Center for recommended placements in writing, math and computer courses at Clackamas Community College.

# 4. Talk to an Advisor

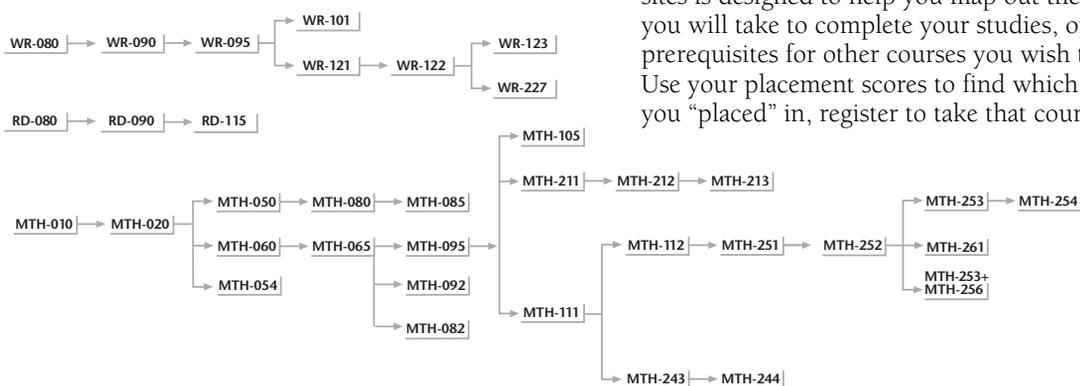
## Advising & Counseling Center

**BILL BROD COMMUNITY CENTER  
503-657-6958, Ext. 2213**

If you are new to Clackamas Community College and you submitted an application for admission and completed placement testing, you are strongly encouraged to attend a New Student Advising Session. This two-hour session will provide you with general information about the college, and the registration process. Advisors will work with you to understand degree requirements, and create a class schedule. The advising sessions are a valuable opportunity to get to know the resources of the college and the keys for successful completion of your college goals.

In the event you are unable to attend a New Student Advising Session, you may come to the Advising & Counseling Center and request to meet with an academic advisor to discuss degree options, course scheduling and receive registration assistance. No appointment is necessary.

### Prerequisites for required 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.

In addition to the staff members in the Advising & Counseling Center, you can schedule an appointment with the faculty advisor in your program area. Your faculty advisor can provide specific information about your program of study, as well as serve as a mentor. Your faculty advisor's name, email address, extension number and office number are listed in the Schedule of Classes each term.

If you plan to transfer to a four-year institution, work closely with an advisor to be sure you are fulfilling that school's transfer requirements. Catalogs for all Oregon college's and universities are available in the Transfer Center which is located in the Advising & Counseling Center. The Transfer Center also contains additional campus and program information on in-state and out-of-state schools. There is also access to thousands of college catalogs via the Internet.

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.

## 5. Register for Classes

### Registrar's Office

**ROGER ROOK HALL, 110  
503-657-6958, EXT. 2262**

Registration is available for currently enrolled, returning and admitted students via the Web, by phone, fax/ mail-in and in person as explained in our *Schedule of Classes* each term. The *Schedule of Classes* is mailed to all households in the college district, is provided on our campuses, and is available on the Web: [www.clackamas.edu](http://www.clackamas.edu)

The following is a checklist for students to review prior to registering:

- Complete an Application for Admission and submit to the Registrar's Office.
- Take college placement tests or have your SAT/ACT scores evaluated for writing and math placement at the Testing/Assessment Center.
- Update your student record with the Registrar's Office if changes have occurred to your name, address, phone number and/or program of study.
- Establish an education plan by attending an advising session, meeting with a faculty advisor or a staff member in the Advising & Counseling Center.
- Review a current *Schedule of Classes* to select courses and become familiar with important dates, policies and procedures.

- Complete a registration form or registration worksheet with the courses you have selected.
- Register via the Web, by phone, mail, fax, or in person.
- Make arrangements to pay tuition and fees with the Student Accounts Office.

Registration and payment assistance is available at the Enrollment Services Center in Roger Rook Hall, by calling the Registrar's Office at 503-657-6958 ext. 2262, or by contacting us at [registrar@clackamas.edu](mailto:registrar@clackamas.edu)

## 6. Pay for Classes

### Student Accounts Office

**ROGER ROOK HALL, 110  
503-657-6958, EXT. 2253**

#### 2006-2007 Tuition and Fees

Tuition and fee rates, as well as payment options 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	General fee*
<b>In-state students OR/CA/ID/NV/WA**:</b>		
1-15 billing credits	\$56/credit	\$4/credit
15-18 billing credits	\$840	\$60
Above 18 billing credits	\$56/credit	\$4/credit

#### Out-of-state and international students (except California, Idaho, Nevada and Washington):

1-15 billing credits	\$194/credit	\$4/credit
15-18 billing credits	\$2910	\$60
Above 18 billing credits	\$194/credit	\$4/credit

#### Other fees

Official transcript	\$5/copy
Late payment fee***	\$25
Nonrefundable third party billing fee	\$15
Returned bank item	\$25

*Certain classes have special fees in addition to tuition and general fee. These are listed in the "Course Fee" column in the credit course listing.*

*\*The general fee supports many CCC student activities including athletics, child care, new technology and student government.*

*\*\*In-state student: American citizen, immigrant or permanent resident of Oregon, California, Idaho, Nevada, or Washington.*

*\*\*\* Late fees are assessed on any outstanding balance on the second, sixth and tenth Friday of the term.*

To reach any college office, call 503-657-6958 and dial the extension you want. (Hearing-impaired TTY/TDD 503-650-6649)

## Factors That Determine Your Tuition

### IN-STATE TUITION

To qualify as an in-state student for tuition purposes, you must be an American citizen, immigrant, refugee or permanent resident of Oregon, California, Idaho, Nevada or Washington and have resided there 90 days prior to the first day of class.

### OUT-OF-STATE TUITION

You are an out-of-state student for tuition purposes if your permanent residence is outside the states of Oregon, California, Idaho, Nevada or Washington or you are an international student/visitor.

You are an international student if you are a citizen of another country and require an I-20 to attend college. (International students do not become residents, regardless of the length of their stay.)

### SENIOR CITIZEN TUITION BENEFIT

If you are 62 years of age or older before the start date of the term, you are eligible for Gold Card status. Once your student record reflects your gold card status, tuition will be charged at the rate of 1/2 of the in-state rate for all CCC sponsored credits 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 (See *Paying in Installments* in the *Schedule of Classes*.) Contact the Student Accounts Office for procedures to follow. Gold Card holders are also entitled to free admission to many college special events and athletic activities. For community education Gold Card tuition benefit policies, see individual Community School listings in the *Schedule of Classes*.

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

### Refund Policy

You may be entitled to a refund for classes that you have officially dropped according to the following refund schedule:

- **Classes scheduled to meet 2 weeks or less:**  
Drop request must be filed before the beginning of class.
- **Classes scheduled to meet 3-4 weeks:**  
Drop request must be filed during the first week of class.
- **Classes scheduled to meet 5 weeks or more:**  
Drop request must be filed during the first two weeks of the class.

Drop requests are processed via the official college registration request form, Web, or Telephone Registration Systems. 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, contact the Student Accounts Office at ext. 2253. You can also refer to the *Schedule of Classes* for additional information.

### Canceled Class

If your class has been canceled you will be notified and officially dropped. Your tuition and fees for this class will be adjusted appropriately.

## FREQUENTLY-ASKED QUESTIONS:

*How do I get advice about course offerings, degree programs and career opportunities?*

Come by the Advising & Counseling Center in the CCC Community Center and you can get advice and information to help you plan your educational experience. You can also call ext. 2213 to make an appointment or have questions answered.

*Can I find help in choosing a career and/or program of study?*

If you haven't decided on your program of study, make an appointment with a counselor to develop an educational and career plan. Contact the Advising & Counseling Center at ext. 2213 to make an appointment.

*How do I find out who my faculty advisor is and where I can reach them?*

Faculty advisors' names, areas of expertise, extension numbers, e-mail addresses and room numbers are located in the registration information section of the *Schedule of Classes* which is published each term.



*Smart Now...Smart Then.*

*Degrees, Certificates & Approved Courses*

## Degrees, Certificates & Approved Courses

Clackamas Community College has been approved by the Oregon State Board of Education to offer Associate (two year) degrees and Certificates of Completion (one year or less). Requirements for completing degrees and certificates have been determined by CCC, in accordance with the Oregon Community College Board of Directors, the State Board of Education criteria and the accreditation requirements of the Northwest Commission on Colleges and Universities. All courses used to fulfill a requirement in an associate degree or certificate of completion must be "college level". College level course work may include professional technical education and/or other courses that exceed basic skills, workplace readiness, and fundamental technical skills. CCC offers four associate degrees:

### Associate of Arts Oregon Transfer Degree (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). These schools include the University of Oregon, Oregon Institute of Technology, Oregon State University, Portland State University, Western Oregon University, Eastern Oregon University and Southern Oregon University. General requirements for obtaining the AAOT from CCC are as follows:

- Earn a minimum of 90 credits of college level course work numbered 100 and above
- Complete a distribution of recognized general education courses (see the AAOT worksheet/student planner on page 17)
- Establish a cumulative 2.0 GPA at CCC
- Establish residency by earning a minimum of 24 credits at CCC.

See pages 15 & 17 for the AAOT worksheet/student planner and additional information.

#### PROGRAM OUTCOME

Program outcomes for the Associate of Arts, Oregon transfer degree include preparation to transfer into upper division baccalaureate courses and Junior standing for the purposes of registration at a college within the Oregon University system.

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

The Associate of Science Oregon Transfer - Business degree is a two year program designed for the student intending to transfer to a four year college or university within the Oregon University System and is pursuing upper division baccalaureate courses in Business. CCC students who have earned the ASOT - Business degree and met the transfer institution's lower-division general education degree requirements will be eligible for junior standing for the purposes of registration. General requirements for obtaining the ASOT-Business degree from CCC are as follows:

- Earn a minimum of 90 credits of college level course work numbered 100 and above
- Complete a distribution of recognized general education courses. (see the ASOT-Business Worksheet/Planner on page 19)

- Complete Business-Specific requirements
- Establish a cumulative 2.0 GPA at CCC
- Establish residency by earning a minimum of 24 credits at CCC

See pages 15 & 19 for the ASOT-Business Degree worksheet/student planner for specific requirements and additional information. It is strongly recommended that students contact the specific OUS campus' Business school early in the first year of their ASOT-Business program to be advised about additional requirements and procedures for admission consideration to the OUS institution and Business school.

#### PROGRAM OUTCOME

Program outcomes for the Associate of Arts, Oregon transfer degree include preparation to transfer into upper division baccalaureate courses with a focus in Business and Junior standing for the purposes of registration at a college within the Oregon University system.

### 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. General requirements for obtaining the AGS from CCC are as follows:

- Earn a minimum of 90 credits of college-level course work
- Complete related instruction course work from: communication, computation, human relations and physical education/health (see the AGS worksheet/student planner and additional information on pages 15 & 20.)
- Establish a cumulative 2.0 GPA at CCC
- Establish residency by earning a minimum of 24 credits at CCC
- Satisfy a computer literacy requirement by passing a CCC course designated with this symbol [C]. See the Schedule of Classes or the course descriptions in this catalog, see pages 75- 158.

#### PROGRAM OUTCOME

Program outcomes for the Associate of General Studies degree include two year college degree experience that supports individual student need and interest.

For Associate of Applied Science degrees and certificates of completion, see pages 23-64.

## 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, 227

#### Computation

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

#### Human Relations

Anthropology: ANT-102, 103  
Business: BA-285  
Education: ED-121, 122, 258  
History: HST-101, 102, 103, 121, 122, 123, 201, 202, 203  
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  
Speech: SP-100, 112, 126, 140, 218

#### Physical Education/Health

Health: Courses with an HE prefix  
Physical Education: Courses with an HPE or PE prefix

## Computer Literacy Requirement

ASSOCIATE OF GENERAL STUDIES • ASSOCIATE OF APPLIED SCIENCE • CERTIFICATES

You must satisfy CCC's computer literacy requirement in order to receive an Associate of Applied Science\*, Associate of General Studies degree or a one-year certificate of completion\*. The requirement may be satisfied by one of the following:

- Placement at the computer literate level as measured by the CCC Computer Placement Exam. See the Testing Center website at <http://depts.clackamas.edu/testing/> for a current testing schedule.
- Passing a CCC course designated with this symbol [C]. See the *Schedule of Classes* or the course descriptions in this catalog, see pages 75- 158.

\* Associate of Applied Science degree or certificate programs may list a specific course which will meet the computer literacy requirement.

*Student Guide 2006-2007*  
**Associate of Arts Oregon Transfer Degree (AAOT)**

Requirements	Courses
<i>Writing (8 credits)</i>	<b>WR-121, 122, 123 or 227</b> (Must have "C" grade or better)
<i>Oral Communication/Rhetoric (3 credits)</i>	<b>SP-111 or SP-112</b> (Must have "C" grade or better)
<i>Mathematics (4 credits)</i>	<b>MTH-105, 111 or higher</b> (Must have "C" grade or better)
<i>Health &amp; Physical Education (3 credits)</i>	<b>Any combination of courses with a prefix of HPE, HE, PE</b>
<b>Must equal a minimum of 10 credits from at least 2 disciplines</b>	<p><i>Arts &amp; Letters</i> (Courses used in this area must be at least 3 credits.)</p> <p><b>Select courses with a prefix of:</b>            ASL, FR, GER, JPN, RUS, SPN (languages must be 200 level)            ART, ENG, HUM (except HUM 100)            J, MUP, MUS, PHL, R, TA            SP (courses numbered SP-126 and above)            WR (except WR-101, 121, 122, 123 or 227)</p> <p style="text-align: center;"><b>GENERAL EDUCATION DISTRIBUTION AREA</b></p>
<b>Must equal a minimum of 15 credits from at least 2 disciplines</b>	<p><i>Social Science</i> (Courses used in this area must be at least 3 credits.)</p> <p><b>Select courses with a prefix of:</b>            ANT, EC, GEO, HST, PS, PSY, SOC,            SSC, WS</p> <p style="text-align: center;"><b>GENERAL EDUCATION DISTRIBUTION AREA</b></p>
<b>Must equal a combined minimum of 15 credits</b>	<p><i>Science/Math/Computer Science</i> (Courses used in this area must be at least 3 credits.)</p> <p><b>A. Select 3 lab courses from the biological and/or physical sciences to total a minimum of 12 credits.</b>  <b>Select courses with a prefix of:</b>            ASC, BI* (except BI-055, BI-163), BOT, CH (except CH-150), ESR, G (except G-119, G-124), GS (except GS-160), PH, Z            *Concurrent enrollment required for BI-160/BI-160L or BI-165C/BI-165CL</p> <p><b>B. Select remaining credits from courses with a prefix of:</b>            ASC, CS, MTH, BI, BOT, CH, ESR, G, GS, PH and Z</p> <p style="text-align: center;"><b>GENERAL EDUCATION DISTRIBUTION AREA</b></p>
<i>Elective Courses</i> Combined with above must equal 90 credits total	<b>Other courses numbered 100 or above may be used in this area, which may include up to 12 credits of professional/technical courses. Please refer to the Professional/Technical pages 23-64 for a listing of courses that may be included in the 12 credits mentioned above.</b>

*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.*

*Note: All courses must be 100 level or higher. Courses numbered 199, 280, and 299 can only be used in the electives areas. No course may be used to satisfy more than one requirement or distribution area.*

*Student Planner Worksheet 2006-2007*  
**Associate of Arts Oregon Transfer Degree (AAOT)**

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

Requirements	Credits Required	CCC Courses Completed	Transferred Courses	Credits Earned	Credits Needed
<i>Writing</i> WR-121, 122, 123 or 227 (Must complete with a "C" grade or better)	8				
<i>Oral Communications/Rhetoric</i> SP-111 or SP-112 (Must complete with a "C" grade or better)	3				
<i>Mathematics</i> MTH-105, 111 or higher (Must complete with a "C" grade or better)	4				
<i>Health &amp; Physical Education</i>	3				
<i>Arts &amp; Letters*</i> Select a minimum of 10 credits from at least two disciplines.	10				
<i>Social Science*</i> Select a minimum of 15 credits from at least two disciplines.	15				
<i>Science/Math/Computer Science*</i> Select a minimum of 15 credits including 3 laboratory courses totaling at least 12 credits in biological or physical sciences.	15				
<i>Elective Courses</i> (May include up to 12 credits of professional/technical courses.)	<i>will vary</i>				
	<b>TOTALS</b>				

(Total minimum of 90 credits required.)

*Additional Graduation Requirements*

- Complete a minimum of 90 credits
- Completion of at least 24 credits at CCC
- Establish cumulative GPA of 2.0 or above

Requests for official evaluation of transcripts, course equivalencies and completion of degree requirements are to be submitted to the Registrar's Office.

*Note: All courses must be 100 level or higher. Courses numbered 199, 280, and 299 can only be used in the electives areas. No course may be used to satisfy more than one requirement or distribution area.*

*Student Guide 2006-2007*  
**Associate of Science Oregon Transfer Degree-Business  
 (ASOT-Business)**

	Requirements	Courses
	<i>Writing (8 credits)</i>	WR-121, 122, 227 (Must have "C" grade or better)
	<i>Oral Communication/Rhetoric (3 credits)</i>	SP-111 or SP-112 (Must have "C" grade or better)
	<i>Mathematics (12 credits)</i>	MTH-111 or higher, 4 credits of statistics (MTH-243 or MTH-244) are required (Must have "C" grade or better)
	<i>Computer Applications</i>	BA-131 or CS-121 and CS-125P (Must have "C" grade or better)
Must equal a minimum of 12 credits from at least 2 disciplines	<i>Arts &amp; Letters</i> (Courses used in this area must be at least 3 credits.)	<b>Select courses with a prefix of:</b> ASL, FR, GER, JPN, RUS, SPN (languages must be 200 level) ART, ENG, HUM (except HUM 100), J, MUP, MUS, PHL, R, SP (courses numbered SP-126 and above), TA, WR (except WR-101, 121, 122, 227)
	<b>GENERAL EDUCATION DISTRIBUTION AREA</b>	
Must equal a minimum of 12 credits from at least 2 disciplines	<i>Social Science</i> (Courses used in this area must be at least 3 credits.)	<b>EC-201 and 202</b> (Must have "C" grade or better) <b>and courses with a prefix of:</b> ANT, EC, GEO, HST, PS, PSY, SOC, SSC, WS
	<b>GENERAL EDUCATION DISTRIBUTION AREA</b>	
Must equal a minimum of 12 credits	<i>Science</i> (Courses used in this area must be at least 3 credits.)	<b>Select courses with a prefix of:</b> ASC, BI* (except BI-055, BI-163), BOT, CH (except CH-150), ESR, G (except G-119, G-124), GS (except GS-160), PH, Z *Concurrent enrollment required for BI-160/BI-160L or BI-165C/BI-165CL
	<b>GENERAL EDUCATION DISTRIBUTION AREA</b>	
	<i>Business Specific</i>	BA-101, 226, 211, 212 and 213 (Must have "C" grade or better)
	<i>Elective and/or University Specific Requirements</i> Other courses numbered 100 or above may be used in this area, which may include up to 12 credits of professional/technical courses. Please refer to the Professional/Technical pages 23-64 for a listing of courses that may be included in the 12 credits mentioned above.	<b>Determined by choice of transfer institution. Please contact your transfer advisor for assistance.</b>

*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.*

*Note: All courses must be 100 level or higher. Courses numbered 199, 280, and 299 can only be used in the electives areas. No course may be used to satisfy more than one requirement or distribution area.*

*Student Planner Worksheet 2006-2007*  
**Associate of Science Oregon Transfer Degree-Business  
 (ASOT-Business)**

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

Requirements	Credits	CCC Courses	Transferred Courses	Credits Earned	Credits Needed
<i>Writing</i> WR-121, 122, 227 (Must complete with a "C" grade or better)	8				
<i>Oral Communications/Rhetoric</i> SP-111 or SP-112 (Must complete with a "C" grade or better)	3				
<i>Mathematics</i> MTH-111 or higher, 4 credits of statistics (MTH-243 or MTH-244) are required (Must complete with a "C" grade or better)	12				
<i>Computer Applications</i> BA-131 or CS-121 and CS-125P (Must complete with a "C" grade or better)	<i>will vary</i>				
<i>Arts &amp; Letters*</i> Select a minimum of 12 credits from at least two disciplines	12				
<i>Social Science*</i> Select a minimum of 12 credits from at least two disciplines, including EC-201 and EC-202	12				
<i>Science*</i> Select a minimum of 12 credits (lab science)	12				
<i>Business Specific</i> BA-101, 226, 211, 212 and 213 (Must complete with a "C" grade or better)	<i>will vary</i>				
<i>Elective Courses and/or University Specific Requirements</i> (Refer to your transfer school for specific university requirements. Up to 12 credits of professional/technical courses may be used.)	<i>will vary</i>				
<b>TOTALS</b>					

(Total minimum of 90 credits required.)

- Complete a minimum of 90 credits
- Completion of at least 24 credits at CCC
- Establish cumulative GPA of 2.0 or above

Requests for official evaluation of transcripts, course equivalencies and completion of degree requirements are to be submitted to the Registrar's Office.

*Note: All courses must be 100 level or higher. Courses numbered 199, 280, and 299 can only be used in the electives areas. 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.*

## Student Planner Worksheet 2006-2007

# 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
<b>Complete one course from each of the related instruction areas</b>	<i>Communication</i>				
	<i>Computation</i>				
	<i>Human Relations</i>				
	<i>PE/Health</i>				
	<i>Total Related Instruction Credits</i>				
<b>Complete additional college level coursework for a total minimum of 90 credits combined with the above</b>	<i>Computer Literacy*</i>				
	<i>Other College Level Courses**</i>				
<b>TOTALS</b>					

- Complete a minimum of 90 credits
- Completion of at least 24 credits at CCC
- Establish cumulative GPA of 2.0 or above
- Meet Computer Literacy requirement

Requests for official evaluation of transcripts, course equivalencies and completion of degree requirements are to be submitted to the Registrar's Office.

\* Satisfy the Computer Literacy requirement by placement on the CCC Computer Literacy Exam or by passing a CCC course designated with this symbol [C]. See the Schedule of Classes or the course descriptions in the catalog, see pages 75-158.

\*\* College level course work may include professional 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 75-158.

## Associate of Applied Science (AAS) & Certificates of Completion (CC)

### Associate of Applied Science (AAS) & Certificates of Completion (CC)

Professional/Technical programs at Clackamas Community College provide the skills and work experience you'll 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 work setting with the latest equipment.

Cooperative Work Experience is an important feature of all CCC professional/technical programs. This special arrangement between CCC and local employers provides you with the opportunity to get on-the-job experience in the field of your choice while earning credit toward your degree or certificate.

CCC offers both one-year and two-year programs designed for employment in the field (many professional/technical programs offer both options). Specific degree and certificate requirements are listed on the following pages.

Program Area	AAS	CC
Accounting	■	
Accounting Clerk		■
Automotive Service Technology	■	
Business Management		■
Business Technology	■	
Clinical Laboratory Assistant		■
Collision Refinishing Technology	■	
Collision Repair/Refinishing Technology		■
Collision Repair Technology	■	
Computer-Aided Drafting/ Computer-Aided Manufacturing	■	
Computer Application Specialist	■	■
Corrections	■	■
Criminal Justice	■	
Dental Assistant**		■
Drafting Technology	■	
Drafting Technology/Architectural	■	
Early Childhood Ed. & Family Studies	■*	■
Electronic Publishing		■
Electronics Systems Technology	■	■
Emergency Management	■	
Emergency Medical Technology		■
Employment Skills Training		■
Energy & Resource Management	■	■
Fire Science (Wildland)	■	■
Geographic Information Systems (GIS)	■	■
Gerontology		■
Horticulture	■	■
Human Resource Management		■
Human Services	■	■
Industrial Technology	■	
Juvenile Corrections		■

### Acquire Practical Marketable Skills

The Associate of Applied Science degrees and Certificates of Completion are professional 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 an AAS degree or Certificate of Completion at CCC. Certificates of Completion are generally a one year program and are designed with occupational content. Please refer to the specific AAS or CC program for certificate/degree 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 24 credits at CCC for an AAS degree; 12 credits for a certificate of completion

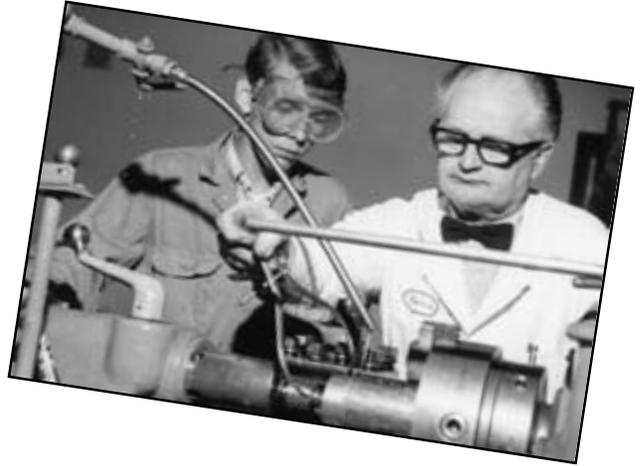
Program Area	AAS	CC
Landscape	■	■
Manufacturing Technology	■	■
Marketing		■
Marketing & Management	■	
Medical Assistant		■
Medical Office Administrative Assistant		■
Microelectronics Systems Technology	■	■
Music Technology		■
Network & Microcomputer Specialist	■	■
Nursing	■	
Occupational Skills Training		■
Office Assistant		■
Paraeducator		■
Project Management	■	■
Quality Control Technician		■
Retail Management*		■
Semiconductor Operator		■
Supervisory Training		■
Utility Workforce Readiness*		■
Water & Environmental Technology	■	■
Water/High-Purity Production		■
Web Design Specialist*		■
Web Design & Development Specialist*	■	
Welding Technology	■	■

\* Pending official approval.

\*\* Pending national accreditation.

*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.*





*Smart Now...Smart Then.*

*Professional Technical*

## *Professional/Technical Programs*

Accounting .....	25	Horticulture .....	44
Accounting Clerk .....	25	Human Resource Management .....	45
Automotive Service Technology .....	26	Human Services .....	46
Business Management .....	26	Industrial Technology .....	47
Business Technology .....	27	Juvenile Corrections .....	47
Clinical Laboratory Assistant .....	28	Landscape .....	48
Collision Repair/Refinishing .....	28	Manufacturing Technology .....	49
Collision Refinishing Technology .....	29	Marketing .....	50
Collision Repair Technology .....	29	Marketing & Management .....	50
Computer-Aided Drafting/ Computer-Aided Manufacturing (CAD/CAM) .....	30	Medical Assistant .....	51
Computer Application Specialist .....	31	Medical Office Administrative Assistant .....	52
Criminal Justice .....	32	Microelectronics Systems Technology .....	53
Corrections .....	33	Music Technology .....	54
Corrections .....	34	Network & Microcomputer Specialist .....	55
Dental Assistant** .....	34	Nursing .....	55
Drafting Technology .....	35	Occupational Skills Training .....	57
Drafting Technology/Architectural Option .....	36	Office Assistant .....	57
Early Childhood Education & Family Studies .....	37	Paraeducator .....	58
Electronic Publishing .....	38	Project Management .....	58
Electronics Systems Technology .....	38	Retail Management .....	59
Emergency Management .....	39	Supervisory Training .....	60
Emergency Medical Technology .....	39	Utility Workforce Readiness* .....	60
Employment Skills Training .....	40	Water & Environmental Technology .....	61
Energy & Resource Management .....	41	Water/High-Purity Production .....	62
Fire Science (Wildland) .....	41	Web Design Specialist* .....	62
Geographic Information Systems (GIS) .....	43	Web Design & Development Specialist* .....	63
Gerontology .....	43	Welding Technology .....	64

\* Pending official approval

\*\* Pending National Accreditation

# Accounting

## ASSOCIATE OF APPLIED SCIENCE DEGREE

The Accounting program at Clackamas 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

Students completing this program should be prepared for entry-level employment in accounting and office careers. 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 bookkeeper, data-entry clerk, financial staff accountant, cost accountant and general office clerk.

For information contact Hugo Grimaldi, ext. 2151 or hugog@clackamas.edu

### ACCOUNTING ASSOCIATE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-211	Financial Accounting I	4
BA-104*	Business Math	3
BA-226	Business Law I	4
WR-121	English Composition	3

### WINTER TERM

BA-131	Introduction to Business Computing [C]	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 w/Tech. [C]	4
BA-213	Decision Making with Accounting Information	4
BA-218	Personal Finance	3
BA-285	Human Relations in Business	4

### ACCOUNTING ASSOCIATE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-223	Principles of Marketing	4
BA-240	Government Accounting	4
BA-256	Income Tax	3
PE/HE/HPE	PE/Health requirement	1

### WINTER TERM

BA-216	Cost Accounting	3
BA-206	Management Fundamentals	4
BA-222	Financial Management	3
BA-227	Business Law II	4

### SPRING TERM

BA-217	Budgeting for Managers	3
BA-225	Business Report Writing	3
BA-248	Auditing	3
BA-280	Business/CWE	3
BT-105	Computerized Accounting	3

Minimum credits required for degree 91

\* MTH-50 is a prerequisite for BA-104 and students must take MTH-50 or place into a higher-level math class before taking BA-104.

# Accounting Clerk

## CERTIFICATE

Curriculum includes full-cycle bookkeeping and accounting, including manual and computerized data entry, transaction analysis, preparation of financial statements and other related tasks. Full-cycle proprietorship and partnership, service and merchandising are also covered, along with posting, preparation of period-end worksheets, entries, financial statements and payroll.

### PROGRAM OUTCOMES

Students completing this certificate should be prepared 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, ext. 2151 or hugog@clackamas.edu

### ACCOUNTING CLERK CERTIFICATE

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-211	Financial Accounting I	4
BA-104*	Business Math	3
WR-121	English Composition	3

### WINTER TERM

BA-131	Introduction to Business Computing [C]	4
BA-156	Business Forecasting	3
BA-177	Payroll Accounting	3
BA-212	Financial Accounting II	4
BA-251	Supervisory Management	3

Continued

**SPRING TERM**

BA-205	Solving Communication Problems w/Tech. [C]	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

Minimum credits required for certificate 50

\* MTH-50 is a prerequisite for BA-104 and students must take MTH-50 or place into a higher-level math class before taking BA-104.

## Automotive Service Technology

### ASSOCIATE OF APPLIED SCIENCE DEGREE INTERNSHIP PROGRAM

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 and those who wish to specialize may take advanced mechanic studies courses for more in-depth experience. Students may enter the program any term.

**PREREQUISITES:**

MTH-020 Fundamentals of Arithmetic or equivalent competency and RD-090 Intermediate Reading Skills or equivalent competency.

**AUTOMOTIVE TECHNICIAN'S INTERNSHIP PROGRAM**

Clackamas Community College and the Northwest Automotive Trades Association co-sponsor the Automotive Technician's Internship Program (ATIP) training program. The program serves a limited number of CCC students each year.

**TOYOTA "T-TEN" INTERNSHIP PROGRAM**

Students sponsored by a dealer attend Clackamas the first year and transfer to Umpqua or Clark for the completion of the course work. Clackamas Community College, in cooperation with Umpqua Community College and Clark College, provide a Toyota dealership internship program.

**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 may include: automotive service mechanic/technician, recreational vehicle service technician and truck service mechanic/technician.

For information contact the Automotive Department, 503-657-6958, ext. 2354.

**AUTOMOTIVE SERVICE TECHNOLOGY ASSOCIATE DEGREE:  
1ST YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
AM-121	General Auto Repair I	3
AM-133	Engine Systems	7
MFG-109	Computer Literacy for Technicians [C]	3
PSY-101	Human Relations	3

**WINTER TERM**

AM-122	General Auto Repair II	3
AM-129	Electrical Systems	7
MTH-050	Technical Mathematics I	3
SP-100	Basic Speech Communication	3

**SPRING TERM**

AM-123	General Auto Repair III	3
AM-131	Chassis Systems	7
WR-101	Communication Skills: Occupational Writing	3

**AUTOMOTIVE SERVICE TECHNOLOGY ASSOCIATE DEGREE:  
2ND YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
AM-235	Power Transmission Systems	7
AM-245	Automatic Transmission Systems	7
HE-252	First Aid/CPR	3

**WINTER TERM**

AB-112	Collision Repair Welding I	2
AM-243	Fuel & Emission Control Systems (prerequisite or corequisite: AM-129)	7
AM-130	Brake Systems	7

**SPRING TERM**

AM-224	Comfort Systems	4
AM-228	Service Shop Management	4
AM-244	Advanced Electrical & Fuel Systems (prerequisites: AM-129 & AM-243)	7
AM-280	Auto Mechanics/CWE	6

Minimum credits required for degree (requirements + electives) 99

*Note: Alternative course schedules are available. Contact the Automotive Department for information.*

## 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**

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 may 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 Dale Hatfield, ext. 2361 or daleh@clackamas.edu; Joan Ryan, ext. 2363 or joanr@clackamas.edu

**BUSINESS MANAGEMENT CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
BA-101	Introduction to Business	4
BA-211	Financial Accounting I	4
BA-104*	Business Math	3
BA-223	Principles of Marketing	4
WR-121	English Composition	3
<b>WINTER TERM</b>		
BA-131	Introduction to Business Computing [C]	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 w/Tech. [C]	4
BA-217	Budgeting for Managers	3
BA-218	Personal Finance	3
BA-224	Human Resource Management	4
BA-280	Business/CWE	3
<i>Minimum credits required for certificate</i>		54
* MTH-50 is a prerequisite for BA-104 and students must take MTH-50 or place into a higher-level math class before taking BA-104.		

*Business Technology*

**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**

Students should acquire 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, receptionist/office assistant, legal assistant and medical secretary.

For information contact Tanya Patrick, ext. 2426 or tanyap@clackamas.edu

**BUSINESS TECHNOLOGY ASSOCIATE DEGREE: 1ST YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BT-122	Keyboarding Skill Building	2
BT-124	Business Editing I	3
BT-160	Word I [C]	3
<b>WINTER TERM</b>		
BA-111	General Accounting I	
or BA-211	Financial Accounting I	4
BT-125	Business Editing II	3
BT-161	Word II [C]	3
BT-172	Introduction Microsoft Outlook	1
BT-176	Excel [C]	3
<b>SPRING TERM</b>		
BT-170	Access [C]	3
BT-216	Office Procedures	4
BT-262	Integrated Projects [C]	3
WR-121	English Composition	3
— —	Business Technology program electives	3

**BUSINESS TECHNOLOGY ASSOCIATE DEGREE: 2ND YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
BA-218	Personal Finance	3
BA-226	Business Law I	4
BA-285	Human Relations in Business	4
— —	Business Technology program electives	4
<b>WINTER TERM</b>		
BA-156	Business Forecasting	3
BA-205	Solving Communication Problems w/Tech. [C]	4
BA-224	Human Resource Management	4
BT-220P	Desktop Publishing I: PageMaker	3
HE-249	Mental Health	
or HPE-295	Health & Fitness for Life	3
<b>SPRING TERM</b>		
BA-225	Business Report Writing	3
BA-280	Business/CWE	6
BT-181	Front Page	3
— —	Business Technology program electives	4

*Minimum credits required for degree (requirements + electives)* 93

\* MTH-50 is a prerequisite for BA-104 and students must take MTH-50 or place into a higher-level math class before taking BA-104.

**BUSINESS TECHNOLOGY PROGRAM ELECTIVES**

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

## 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 ambulatory assistant-level 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.

Program is approved through the National Accrediting Agency for Clinical Laboratory Science (NAACLS).

Admission into the Clinical Laboratory Assistant program is during summer term by special application only. Specific skill levels are required in reading, writing and math. 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. A physical examination by a licensed health care provider, immunizations and a criminal history background check are required.

### PROGRAM OUTCOMES

Upon successful completion of the program, students will be eligible to sit for the National Certificate Association of Clinical Laboratory Science (NCA) Phlebotomy examination and/or the American Medical Technologist (AMT) Certified Office Laboratory Technician (COLT) examination. Students will be prepared for entry level employment as a clinical lab assistant/phlebotomist.

### 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.

Application packets with admission procedures and requirements are available from the Enrollment Services Center, the Advising & Counseling Center, or go to <http://depts.clackamas.edu/healthsciences>

For continuing education for healthcare providers see Healthcare Professional Development page 195.

For information contact Helen Wand, ext. 5055 or [helenw@clackamas.edu](mailto:helenw@clackamas.edu)

### CLINICAL LABORATORY ASSISTANT CERTIFICATE

FALL TERM		CREDITS
BI-055	Introduction to Human Biology	
or BI-102	General Biology (prerequisite BI-101)	3-4
CLA-100	Introduction to Healthcare	2
CLA-101	Clinical Laboratory Assistant Skills I	4
MA-110	Medical Terminology	3
MA-115	Phlebotomy	1
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3
WINTER TERM		
CLA-102	Clinical Laboratory Assistant Skills II	4
CLA-115	Laboratory Administrative Skills	2
CLA-119	Phlebotomy/Laboratory Practicum I	3
CS-120	Survey of Computing [C]	4
MTH-050	Technical Mathematics I	3

### SPRING TERM

CLA-103	Clinical Laboratory Assistant Skills III	4
CLA-120	Phlebotomy/Laboratory Practicum II	4
PSY-101	Human Relations	3
SP-100	Basic Speech Communication	
or SP-218	Interpersonal Communication	3-4

*Minimum credits required for certificate* 46-48

Current First Aid and CPR for Healthcare Providers (AHA or ASHI) are required during practicums and must be taken prior to winter term practicum. A criminal history background check is required.

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 quarter.

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.

## Collision Repair/Refinishing

### CERTIFICATE

The refinishing program at Clackamas simulates real working conditions in a 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. Program flexibility allows students to enter any term and proceed at their own pace. The certificate program is a four-term certificate program.

Refinishing technicians prepare vehicles for paint, mix and tint paint, do spot repairs and overall refinishing. Course work covers the use of urethane systems including single, two stage and tri-coat color applications. Skills needed by refinishing technicians include the ability to machine and hand-sand, work with hazardous materials and use product application techniques.

### PROGRAM OUTCOMES

Program outcomes include entry-level skills for employment in minor auto body repair in preparation for painting, automotive paint preparation and automotive painting and refinishing processes.

**CAREERS**

Career opportunities may include: paint prep technician, paint detail technician and auto body painter in independent repair shops, auto dealerships, paint suppliers, heavy equipment dealers or truck painting facilities.

For information contact David Bradley, ext. 2628 or [bradleyd@clackamas.edu](mailto:bradleyd@clackamas.edu)

**COLLISION REPAIR REFINISHING CERTIFICATE**

FALL TERM		CREDITS
AB-112	Collision Repair Welding I	2
ABR-125	Collision Repair/Refinishing I	12
MTH-050	Technical Mathematics I	3
WINTER TERM		
ABR-127	Collision Repair/Refinishing II (prerequisites: ABR-125 & AB-112)	12
MFG-109	Computer Literacy for Technicians [C]	3
WR-101	Communication Skills: Occupational Writing	3
SPRING TERM		
ABR-129	Collision Repair/Refinishing III (prerequisite: ABR-127)	12
AM-228	Service Shop Management	4
HE-252	First Aid/CPR	3
SUMMER TERM		
ABR-180	Auto Body Refinishing/CWE	6
PSY-101	Human Relations	3
<i>Minimum credits required for certificate</i>		63

## Collision Refinishing Technology

**ASSOCIATE OF APPLIED SCIENCE DEGREE**

The refinishing program at Clackamas simulates real working conditions in a 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. Program flexibility allows students to enter any term and proceed at their own pace.

Refinishing technicians prepare vehicles for paint, mix and tint paint, do spot repairs and overall refinishing. Course work covers the use of urethane systems including single, two stage and tri-coat color applications. Skills needed by refinishing technicians include the ability to machine and hand-sand, work with hazardous materials and use product application techniques.

**PROGRAM OUTCOMES**

Program outcomes include entry-level skills for employment in collision refinishing technology, including body preparation and painting and refinishing techniques.

**CAREERS**

Career opportunities may include collision repair, painter, restoration painter, estimator or manager in independent repair shops, auto dealerships, paint suppliers, heavy equipment dealers or truck painting facilities.

For information contact David Bradley, ext. 2628 or [bradleyd@clackamas.edu](mailto:bradleyd@clackamas.edu)

**COLLISION REFINISHING TECHNOLOGY ASSOCIATE DEGREE: 1ST YEAR**

FIRST TERM		CREDITS
AB-112	Collision Repair Welding I	2
ABR-125	Collision Repair/Refinishing I	12
MTH-050	Technical Mathematics I	3
SECOND TERM		
ABR-127	Collision Repair/Refinishing II	12
MFG-109	Computer Literacy for Technicians [C]	3
WR-101	Communication Skills: Occupational Writing	3
THIRD TERM		
ABR-129	Collision Repair/Refinishing III	12
HE-252	First Aid/CPR	3
AM-228	Service Shop Management	4

**COLLISION REFINISHING TECHNOLOGY ASSOCIATE DEGREE: 2ND YEAR**

FOURTH TERM		CREDITS
ABR-225	Production Shop Techniques	10
— —	General elective (any college level course)	3
FIFTH TERM		
ABR-227	Restoration Practices	10
AB-149	Collision Repair Estimating I	2
ABR-142	Airbrush Art	2
SIXTH TERM		
AB-150	Collision Estimating II	2
— —	General elective (any college level course)	3
ABR-180	Auto Body Refinishing/CWE	6
PSY-101	Human Relations	3

*Minimum credits required for degree (requirements + electives):* 95

Recommended electives: ABR-152 Custom Painting Fundamentals, ABR-162 Basic Automotive Pinstriping.

## Collision Repair Technology

**ASSOCIATE OF APPLIED SCIENCE DEGREE**

Course work covers advanced techniques for welding automotive metals, installing fixed and adjustable glass and repairing dents, fiberglass and rubber parts. Repair of electrical, safety, steering and suspension and air conditioning systems is also covered.

**PROGRAM OUTCOMES**

Program outcomes include entry-level skills for employment to repair or replace damaged panels, parts and frames on both unibody and conventional frame vehicles.

*Continued*

**CAREERS**

Career opportunities are similar to those for collision repair/refinishing and may also include auto body repairer, auto body frame technician and auto body prep person.

For information contact Wayne Austen, ext. 2249 or waynea@clackamas.edu

**COLLISION REPAIR TECHNOLOGY ASSOCIATE DEGREE: 1ST YEAR**

FALL TERM		CREDITS
AB-112	Collision Repair Welding I	2
AB-113	Collision Repair I/Nonstructural	12
HE-252	First Aid/CPR	3
WINTER TERM		
AB-111	Collision Repair/Chassis & Brakes	5
AB-123	Collision Repair Welding II	2
MTH-050	Technical Mathematics I	3
WR-101	Communication Skills: Occupational Writing	3
SPRING TERM		
AB-133	Collision Repair II/Structural	12
AB-211	Collision Repair/Electrical I	4
AM-228	Service Shop Management	4

**COLLISION REPAIR TECHNOLOGY ASSOCIATE DEGREE: 2ND YEAR**

FALL TERM		CREDITS
AB-222	Collision Repair III/Advanced Structural	12
SP-100	Basic Speech Communication	3
— —	General elective (any college level course)	3
WINTER TERM		
AB-280	Collision Repair/CWE	6
AM-224	Comfort Systems	4
MFG-109	Computer Literacy for Technicians [C]	3
SPRING TERM		
AB-224	Advanced Collision Repair IV	10
AB-231	Collision Repair/Electrical II	3
— —	General elective (any college level course)	3
<i>Minimum credits required for degree (requirements + electives)</i>		97

**RECOMMENDED ELECTIVES**

Any Automotive Service Technology (AM), Collision Repair (AB) or Collision Repair/Refinishing (ABR) course not included in the Collision Repair Technology Associate Degree program.

## Computer-Aided Drafting/ Computer-Aided Manufacturing (CAD/CAM)

**ASSOCIATE OF APPLIED SCIENCE DEGREE**

This program combines training in computer-aided drafting (CAD) and computer-aided manufacturing (CAM). Course work emphasizes computer-aided mechanical drafting, 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 technician and draftsman to provide a company with the needed computerized drafting or computer-aided manufacturing support. The technician's training gives them the skills to support initial product design through manufacturing, including design and print-reading, CAD and kinematics drafting, machine tool operations and requisite mathematical and geometric knowledge.

**CAREERS**

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

For information contact Mike Mattson (Manufacturing), ext. 2483 or mattsonm@clackamas.edu; Michael Jones (Drafting), ext. 2443 or mikej@clackamas.edu

**MANUFACTURING ENGINEERING TECHNOLOGY (OIT transfer courses)**

The CCC Manufacturing Technology Department, in partnership with Oregon Institute of Technology (OIT), offers a significant number of transferable classes into OIT's Manufacturing Engineering Technology degree program. Contact the Manufacturing department for more information, ext. 2483.

**COMPUTER-AIDED DRAFTING/COMPUTER-AIDED MANUFACTURING (CAD/CAM) ASSOCIATE DEGREE**

FIRST TERM		CREDITS
CDT-102	Sketching & Problem Solving	3
CDT-103	Computer-Aided Drafting I	4
MFG-104	Print Reading	2
MTH-050**	Technical Mathematics I	3
WR-101***	Communication Skills: Occupational Writing	3
SECOND TERM		
CDT-104*	Professional Computing Basics [C]	3
CDT-105	Computer-Aided Drafting II	4
MFG-105	Dimensional Inspection	2
MFG-111	Machine Tool Fundamentals I	6
MTH-080**	Technical Mathematics II	3

**THIRD TERM**

MFG-106	Applied Geometric Dimensioning & Tolerancing for Manufacturing	3
MFG-112	Machine Tool Fundamentals II	6
MTH-085**	Technical Mathematics III	3
— —	CAD/CAM program elective	3

**FOURTH TERM**

MFG-201	CNC I: Set-up & Operation	4
MFG-204	Computer-Aided Manufacturing I	4
— —	CAD/CAM program elective	3
— —	CAD/CAM program elective	3
— — **	Human Relations requirement (see page 15)	3

**FIFTH TERM**

MFG-113	Machine Tool Fundamentals III	6
MFG-202	CNC II: Programming & Operation	4
MFG-205	Computer-Aided Manufacturing II	4
— —	PE/Health requirement (see page 15)	3

**SIXTH TERM**

MFG-206	Computer-Aided Manufacturing III	2
MFG-211	Machine Tool Fundamentals IV	6
MFG-221	Materials Science	3
MFG-280	Manufacturing Technology/CWE	4
— —	CAD/CAM program elective	3

Minimum credits required for degree: 100

**CAD/CAM PROGRAM ELECTIVES (12 OR MORE CREDITS)**

CDT-107	Computer-Aided Drafting III	4
CDT-108	CAD 3-D	3
CDT-108a	Introduction to Solid Modeling***	3
CDT-109A	Project Drafting I-CAD/CAM	2
CDT-110	Kinematics Drafting	3
CDT-223	Inventor Fundamentals***	3
CDT 225	Advanced Solid Modeling***	3
CDT-295	Tool Design	3
CDT-296	Tool Design II	3
MFG-203	CNC III: Applied Programming & Operation***	3

\* MFG-209 Programming and Automation for Manufacturing [C], can be substituted for CDT-104.

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 the Advising & Counseling Center for the transfer requirements of the specific advanced program or school.

\*\*\*Recommended

# Computer Application Specialist

**CERTIFICATE  
ASSOCIATE OF APPLIED SCIENCE DEGREE**

The Computer Application Specialist program prepares students for technical support 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. Cooperative Work Experience (CWE) is supervised on-the-job employment that supplements the academic classroom environment.

Prerequisites for first term classes include completed course work or placement out of CS-120 Survey of Computing, WR-095 Paragraph to Essay and MTH-065 Algebra II. This program is an open program, meaning that students may take any class in the program for which they have completed the prerequisite. Note: Placement at a level of math higher than MTH-092 does not satisfy the MTH-092 requirement.

**PROGRAM OUTCOMES**

Program outcomes 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 may 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, ext. 5198 or dcarino@clackamas.edu

**COMPUTER APPLICATION SPECIALIST CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
CS-121	Computer Applications [C]	3
CS-140	Operating Systems I [C]	4
CS-160	Computer Tech Orientation [C]	2
CS-225	Computer End-User Support [C]	3
MTH-092	Math for Computer Technicians	4
<b>WINTER TERM</b>		
CS-125H	HTML & Web Site Design [C]	3
CS-125P	Computer Publishing [C]	3
CS-135W	Advanced Word Processing [C]	3
CS-179	Data Communications Concepts [C]	3
WR-101	Communications Skills: Occupational Writing	
or WR-121	English Composition	3

Continued

**SPRING TERM**

BA-101	Introduction to Business	
or BA-103	Business Strategies for Computer Consultants	3-4
CS-135I	Advanced Internet Applications [C]	3
CS-135S	Advanced Spreadsheet [C]	3
CS-280	Computer Science/CWE	3
— —	Human Relations requirement (see page 15; recommended: BA-285 or PSY-101 )	3-4

Minimum credits required for certificate: 46-48

**COMPUTER APPLICATIONS SPECIALIST ASSOCIATE DEGREE: 1ST YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
CS-121	Computer Applications [C]	3
CS-140	Operating Systems I [C]	4
CS-160	Computer Tech Orientation [C]	2
CS-225	Computer End-User Support [C]	3
MTH-092	Math for Computer Technicians	4

**WINTER TERM**

CS-125H	HTML & Web Site Design [C]	3
CS-135W	Advanced Word Processing [C]	3
CS-179	Data Communications [C]	3
CS-240W	Operating Systems II: Windows [C]	3
WR-101	Communications Skills: Occupational Writing	
or WR-121	English Composition	3

**SPRING TERM**

ART-225	Computer Graphics I	3
BA-101	Introduction to Business	
or BA-103	Business Strategies for Computer Consultants	3-4
CS-135I	Advanced Internet Applications [C]	3
CS-133VB	Visual Basic.NET I [C]	3
CS-280	Computer Science/CWE	3

**COMPUTER APPLICATIONS SPECIALIST ASSOCIATE DEGREE: 2ND YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
CS-133S	Web Application Development I [C]	3
CS-135DB	Advanced Database [C]	3
CS-140U	Operating Systems I: Linux/UNIX [C]	3
— —	Human Relations requirement (see page 15; recommended: BA-285 or PSY-101)	3-4
— —	Focus area	3-4

**WINTER TERM**

CS-125P	Computer Publishing [C]	3
CS-195	Multimedia for the Web [C]	3
CS-275	Database Design [C]	3
HE-252	First Aid/CPR	
or HPE-295	Health & Fitness for Life	3
— —	Focus area	4-5

**SPRING TERM**

CS-135S	Advanced Spreadsheet [C]	3
CS-133VA	Visual Basic for Applications [C]	3
CS-280	Computer Science/CWE	6
— —	Focus area	3-6

Minimum credits required for degree (requirements & electives) 92-98

**ADDITIONAL COURSES FROM FOCUS AREA**

Complete all courses from one of the following Focus Areas (11-12 credits)

**APPLICATION SUPPORT**

ART-226	Computer Graphics II [C]	3
BT-220P	Desktop Publishing I: PageMaker	
or BT-177	Microsoft Project	3
CS-226	Applications Support [C]	3
CS-289I	Web Server Administration [C]	2

**WEB/DATABASE PROGRAMMING**

CS-233S	Web Application Development II [C]	3
CS-234S	Web Application Development III [C]	3
CS-289I	Web Server Administration [C]	2
CS-295	Website Technologies II [C]	3

**ACCOUNTING**

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

**PROGRAMMING**

CS-161	Computer Science I [C]	4
CS-162	Computer Science II [C]	4
CS-260	Data Structures [C]	4

## 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 during any term.

The course work for this program includes cooperative work experience which affords the student opportunity for hand-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 may 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 Dick Ashbaugh, ext. 2237 or dicka@clackamas.edu

**CRIMINAL JUSTICE ASSOCIATE DEGREE: 1ST YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
CJA-110	Introduction to Law Enforcement	3
CJA-112	Patrol Procedures	3
CJA-200	Community Relations/Policing	3
HE-250	Personal Health	3
WR-121	English Composition	3

<b>WINTER TERM</b>		
CJA-120	Judicial Process	3
CJA-130	Introduction to Corrections	3
CJA-213	Interview & Interrogation	3
SP-111	Public Speaking	4
WR-122	English Composition	3

<b>SPRING TERM</b>		
CJA-101	Criminology	3
CJA-201	Juvenile Delinquency	3
CJA-240	Cultural Diversity/Law Enforcement	3
HE-205	Youth Addiction	3
MTH-050	Technical Mathematics I	
	or MTH-065 Algebra II	3-4

**CRIMINAL JUSTICE ASSOCIATE DEGREE: 2ND YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
CJA-122	Criminal Law	3
CJA-210	Criminal Investigation I	3
CS-120	Survey of Computing [C]	4
CJA-223	Criminal Justice Ethics	3
PSY-101	Human Relations	3

<b>WINTER TERM</b>		
CJA-211	Criminal Investigation II	3
CJA-220	Substantive Law	3
CJA-243	Narcotics & Dangerous Drugs	3
SOC-206	Institutions & Social Change	4
— —	Criminal Justice program elective	3

<b>SPRING TERM</b>		
CJA-203	Crisis Intervention	3
CJA-212	Criminal Investigation III	3
CJA-222	Procedural Law	3
CJA-280	Criminal Justice/Corrections/CWE	6
WR-227	Technical Report Writing [C]	3

*Minimum credits required for degree (requirements + electives)* 96-97

**CRIMINAL JUSTICE PROGRAM ELECTIVES**

CJA-134	Correctional Institutions
CJA-137	Mass Murder/Serial Killers
CJA-138	Terrorism/Impact/Strategies
CJA-140	Introduction to Crime Analysis
CJA-141	Introduction to Crime Mapping
CJA-142	Statistics for Crime Analysis
CJA-143	Crime Analysis and Statistical Analysis
CJA-230	Juvenile Corrections
CJA-232	Corrections Casework

*Corrections*

**CERTIFICATE**

The corrections certificate program utilizes an inter-disciplinary approach, including sociological, psychological and biological behavioral perspectives to provide students a well-rounded basis for interacting with corrections clients in a variety of correctional settings.

Course work includes cooperative work experience, hands-on experience in a correctional agency, to supplement and apply knowledge acquired in academic courses.

**PROGRAM OUTCOMES**

Program outcomes include the skills and knowledge needed to qualify for an entry-level position in a 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 may include correctional officer, work release counselor and corrections technician.

For information contact Dick Ashbaugh, ext. 2237 or [dicka@clackamas.edu](mailto:dicka@clackamas.edu)

**CRIMINAL JUSTICE/CORRECTIONS OPTION CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
CJA-110	Intro to Law Enforcement	3
CJA-130	Intro to Corrections	3
CS -120	Survey of Computing [C]	4
SP-111	Public Speaking	4

<b>WINTER TERM</b>		
CJA-120	Judicial Process	3
CJA-134	Correctional Institutions	3
HE-250	Personal Health	3
PSY-221	Introduction to Counseling	4
WR-121	English Composition	3

<b>SPRING TERM</b>		
CJA-101	Criminology	3
CJA-203	Crisis Intervention	3
CJA-280	Corrections/CWE	3
MTH-050	Technical Mathematics I	
	or MTH-065 Algebra I	3-4
WR-122	English Composition	3

*Minimum credits required for certificate* 45-46

**JUVENILE CORRECTIONS**

See certificate program on page 47.

## Corrections

### ASSOCIATE OF APPLIED SCIENCE DEGREE

The corrections program utilizes an inter-disciplinary approach, including sociological, psychological and biological behavioral perspectives to provide students with a well-rounded basis for interacting with corrections clients in a variety of correctional settings.

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

#### PROGRAM OUTCOMES

Program outcomes of the two-year option include 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 Dick Ashbaugh, ext. 2237 or [dicka@clackamas.edu](mailto:dicka@clackamas.edu)

#### CRIMINAL JUSTICE/CORRECTIONS OPTION ASSOCIATE DEGREE: 1ST YEAR

FALL TERM		CREDITS
CJA-110	Introduction to Law Enforcement	3
CJA-130	Introduction to Corrections	3
CS-120	Survey of Computing [C]	4
SP-111	Public Speaking	4
WR-121	English Composition	3

#### WINTER TERM

CJA-120	Judicial Process	3
CJA-134	Correctional Institutions	3
HE-250	Personal Health	3
PSY-221	Introduction to Counseling	4
WR-122	English Composition	3

#### SPRING TERM

CJA-101	Introduction to Criminology	3
CJA-203	Crisis Intervention	3
HE-205	Youth Addiction	3
MTH-050	Technical Mathematics I	
or MTH-065	Algebra II	3-4
— —	Criminal Justice program elective	3

#### CRIMINAL JUSTICE/CORRECTIONS OPTION ASSOCIATE DEGREE: 2ND YEAR

FALL TERM		CREDITS
CJA-122	Criminal Law	3
CJA-232	Corrections Casework	3
CJA-223	Criminal Justice Ethics	3
PSY-101	Human Relations	3
— —	Criminal Justice program elective	3

#### WINTER TERM

CJA-201	Juvenile Delinquency	3
CJA-213	Interview & Interrogation	3
CJA-243	Narcotics & Dangerous Drugs	3
SOC-206	Institutions & Social Change	4
— —	Criminal Justice program elective	3

#### SPRING TERM

CJA-230	Juvenile Corrections	3
CJA-240	Cultural Diversity/Law Enforcement	3
CJA-280	Criminal Justice/Corrections/CWE	6
— —	Criminal Justice program elective	3

Minimum credits required for degree 94-95

#### CRIMINAL JUSTICE PROGRAM ELECTIVES

CJA-112	Patrol Procedures
CJA-137	Mass Murder/Serial Killers
CJA-138	Terrorism Impact/Strategies
CJA-140	Introduction to Crime Analysis
CJA-141	Introduction to Crime Mapping
CJA-200	Community Relations/Policing
CJA-210	Criminal Investigation I
CJA-211	Criminal Investigation II
CJA-212	Criminal Investigation III
CJA-220	Substantive Law
CJA-222	Procedural Law

## Dental Assistant

### CERTIFICATE

This 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 approval by the ADA is pending.

Admission to the Dental Assistant program is during summer term to enroll for fall classes. Admission is by special application only. Specific skills are required in reading, writing and math. 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. A physical examination by a licensed healthcare provider, immunizations and a criminal history background check are required. Students will participate in unpaid, supervised externships in the dental care setting.

#### PROGRAM OUTCOMES

Upon successful completion of the program, students will be eligible to take the necessary exams offered through the Dental Assistant National Board and the Oregon Board of Dentistry. 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 from the Enrollment Services Center, the Advising & Counseling Center, or at <http://depts.clackamas.edu/healthsciences>

For continuing education for healthcare providers see Healthcare Professional Development page 195.

For information contact Maria Corona, ext. 2321 or [maria@clackamas.edu](mailto:maria@clackamas.edu)

**DENTAL ASSISTANT PROGRAM CERTIFICATE**

FALL 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
MTH-050	Technical Mathematics I	3
WINTER TERM		
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
CS-120	Survey of Computing [C]	4
SPRING TERM		
DA-106	Clinical Procedures III	2
DA-130	Clinical Practicum III	8
DA-145	Dental Office Procedures	2
PSY-101	Human Relations	3
WR-101	Communication Skills: Occupational Writing	3
<i>Minimum credits required for certificate</i>		49

Current CPR for Healthcare Providers (AHA) is required during practicums and must be taken prior to Fall Term Practicum. A criminal history background check is required.

Note: The ADA requires all courses receive a letter grade. 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 in one academic year.

*Drafting Technology*

**ASSOCIATE OF APPLIED SCIENCE DEGREE  
PROFESSIONAL UPGRADE**

Professional drafters convert engineering sketches and designs into formal drawings for product manufacturing, building construction or facilities layout. The foundation of the Drafting technology program is mechanical (manufacturing) drafting with exposure to each of the drafting fields, including architectural, structural, civil, industrial piping and sheet metal drafting. Students may enter the program any term. Coursework covers the basics of 2D and 3D modeling, customization, and programming. Instruction stresses developing good work habits and logical problem solving that applies industrial standards and techniques.

Some courses are offered in distance learning formats that require that you have your own computer and a current version of AutoCAD.

Professional Upgrade training and continuing education is available. Please refer to the course listings section for classes with a CAD prefix for short term training.

**DRAFTING FOR THE DISABLED**

The program works with students with disabilities. The department can assist in customizing a workstation with adaptive equipment. Students pace themselves, allowing additional time for training to learn commands and procedures. Specific needs for adaptive equipment are dealt with on an individual basis.

**PROGRAM OUTCOMES**

Program outcomes include the skills necessary for entry-level work as a drafter in engineering, manufacturing, construction, government, utilities, design, management, computer programming and related occupations.

**CAREERS**

Career opportunities may include: architectural and civil drafters, mechanical drafters and electrical drafters.

For information contact Michael Jones, ext. 2443 or [mikej@clackamas.edu](mailto:mikej@clackamas.edu)

**COMPUTER-AIDED DRAFTING/COMPUTER-AIDED MANUFACTURING (CAD/CAM)**

See degree program on page 30.

**GEOGRAPHIC INFORMATION SYSTEMS (GIS)**

See certificate and degree programs on page 43.

*Continued*

**DRAFTING TECHNOLOGY ASSOCIATE DEGREE****FIRST TERM**

	<b>CREDITS</b>
CDT-101 Drafting Technology Survey	3
CDT-102 Sketching and Problem Solving	3
CDT-103 Computer-Aided Drafting I	4
CDT-104 Professional Computing Basics [C]	3
MTH-050* Technical Mathematics I (higher levels of math may be substituted)	3

**SECOND TERM**

CDT-105 Computer-Aided Drafting II	4
CDT-106 Applied Descriptive Geometry	3
MTH-080* Technical Mathematics II	3
WR-101 Communication Skills: Occupational Writing	3
— —* Human Relations requirement (see page 15)	3

**THIRD TERM**

CDT-107 Computer-Aided Drafting III	4
CDT-108 CAD 3D	3
CDT-202 Architectural Drafting I	4
CDT-204 Civil Drafting	3
MTH-085* Technical Mathematics III	3

**FOURTH TERM**

CDT-108A Introduction to Solid Modeling	3
CDT-109 Project Drafting I	5
CDT-110 Kinematics Drafting	3
CDT-111 Geometric Dimensioning & Tolerancing	3
CDT-201 AutoCAD Customization	3

**FIFTH TERM**

CDT-203 Sheet Metal Drafting	3
CDT-206 CAD/CAM Integration	2
CDT-208 Schematic Drafting	3
CDT-209 Structural Drafting I	3
CDT-225 Advanced Solid Modeling	3
— —* PE/Health requirement (see page 15)	1

**SIXTH TERM**

CDT-207 Introduction to AutoLISP	3
CDT-210 Industrial Pipe Drafting	3
CDT-211 CAD Technical Communication	3
CDT-280 Drafting Technology/CWE	6

Minimum credits required for degree 96

\* 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 the Advising & Counseling Center for the transfer requirements of the specific advanced program or school.

## *Drafting Technology/ Architectural Option*

### ASSOCIATE OF APPLIED SCIENCE DEGREE

Professional drafters convert engineering sketches and designs into formal drawings for building construction or facilities layout. Exposure to each of the drafting fields, including architectural, structural, civil, industrial piping and sheet metal drafting will be given. Students may enter the program any term. Instruction stresses industrial standards and techniques; and building applicable skills, work habits and logic.

**DRAFTING FOR THE DISABLED**

The program works with students with disabilities. The department can assist in customizing a workstation with adaptive equipment. Students pace themselves, allowing additional time for training to learn commands and procedures. Specific needs for adaptive equipment are dealt with on an individual basis.

**PROGRAM OUTCOMES**

Program outcomes include the skills necessary for entry-level work as a drafter in engineering, manufacturing, construction, government, utilities, design, management, estimating, computer programming and related occupations.

**CAREERS**

Career opportunities may include: architectural and civil drafters.

For information contact Michael Jones, ext. 2443 or [mikej@clackamas.edu](mailto:mikej@clackamas.edu)

**ARCHITECTURAL OPTION**

This degree option allows students to receive an Associate of Applied Science degree in Drafting Technology/Architectural Option by completing courses in residential and structural drafting in place of advanced mechanical drafting classes.

**DRAFTING TECHNOLOGY/ARCHITECTURAL OPTION ASSOCIATE DEGREE****FIRST TERM**

	<b>CREDITS</b>
CDT-101 Drafting Technology Survey	3
CDT-102 Sketching and Problem Solving	3
CDT-103 Computer-Aided Drafting I	4
CDT-104 Professional Computing Basics [C]	3
MTH-050* Technical Mathematics I (higher levels of math may be substituted)	3

**SECOND TERM**

CDT-105 Computer-Aided Drafting II	4
CDT-106 Applied Descriptive Geometry	3
MTH-080* Technical Mathematics II	3
WR-101 Communication Skills: Occupational Writing	3
— —* Human Relations requirement (see page 15)	3

**THIRD TERM**

CDT-107 Computer-Aided Drafting III	4
CDT-108 CAD 3D	3
CDT-202 Architectural Drafting I	4
CDT-204 Civil Drafting	3
MTH-085* Technical Mathematics III	3

**FOURTH TERM**

CDT-201 AutoCAD Customization	3
CDT-212A Architectural Drafting II	3
CDT-212B Architectural Materials	2
CDT-214 Building Codes	2
CDT-219 Architectural Detailing	3
CDT-209 Structural Drafting I	3

**FIFTH TERM**

CDT-203	Sheet Metal	3
CDT-211	CAD Technical Communication	3
CDT-213	Architectural Drafting III	4
CDT-215	Structural Drafting II	4
MFG-221	Materials Science	3

**SIXTH TERM**

CDT-216	Structural Drafting III	4
CDT-217	Introduction to Remodeling	4
CDT-280	Drafting Technology/CWE	6
—	PE/Health requirement (see page 15)	1-3

Minimum credits required for degree 97-99

**ADDITIONAL RECOMMENDED COURSE**

CDT-207	Introduction to AutoLISP	3
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\* 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 the Advising & Counseling Center for the transfer requirements of the specific advanced program or school.

## Early Childhood Education & Family Studies

### CERTIFICATE ASSOCIATE OF APPLIED SCIENCE DEGREE

*Pending State Approval (associate degree only)*

This program provides a foundation in the early childhood care and education core knowledge areas. Course work is high experiential and interactive, and follows DAP (Developmentally Appropriate Practices) as outlined by the National Associate for the Education of Young Children (NAEYC).

**PROGRAM OUTCOMES**

Upon satisfactory completion of the one-year (4 terms) certificate, students will have completed the education/training required for Oregon's Early Childhood Care and Education Professional Development Registry (PDR) at Step 8. Program outcomes include the skills necessary for entry-level work in childhood care and education in both private & public school settings.

**CAREERS**

Upon satisfactory completion of the one-year (4 terms) course work, students will receive a Certificate in Early Childhood Education & Family Studies. This one-year certificate prepares participants for careers as early childhood care and education practitioners (home or center based), preschool teachers, or paraprofessionals in child and family support systems. Students who complete the certificate will have the option to continue on for a second year—to obtain the AAS in Human Services or AAS in Early Childhood & Family Studies.

Upon completion of the second year coursework for the AAS in Early Childhood and Family Studies degree, students should be prepared to work in a variety of educational and child and family support settings as in charge teachers, or child and family support personnel. These settings include preschools, child care centers, private kindergartens, etc. Additionally, they will be prepared to work as paraprofessionals in public school settings (PK-Elementary grades).

For information contact Patricia McIlveen, ext 2240 or patriciam@clackamas.edu

**EARLY CHILDHOOD & FAMILY STUDIES CERTIFICATE**

SUMMER TERM		CREDITS
MTH-050	Technical Mathematics I or MTH-065 Algebra I	3-4
WR-121	English Composition or WR-101 Communication Skills/Occupational Writing	3

FALL TERM		
CS-120	Survey of Computing [C]	4
ECE-150	Introduction & Observation in Early Childhood Education	3
HDF-260	Child Abuse & Neglect	3
HDF-225	Prenatal, Infant & Toddler Development*	3
FN-110	Personal Nutrition or FN-225 Nutrition	3-4

WINTER TERM		
ECE-209	Theory & Practicum (on campus)	3
ECE-240	Lesson & Curriculum Planning	3
HDF-247	Preschool Child Development	3
HS-154	Community Resources	3
ECE-154	Language & Literacy	3

SPRING TERM		
ECE-280	CWE/Preschool Practicum I	3
HDF-140	Contemporary American Families	3
ECE-239	Helping Children & Families Cope with Stress	3
SP-140	Intro to Intercultural Communication or ED-258 Multicultural Education	3-4
HE-261	Community/CPR (Includes Infant CPR)	1

Minimum credits required for certificate 50-53

**EARLY CHILDHOOD & FAMILY STUDIES ASSOCIATE DEGREE:  
1ST YEAR**

Complete certificate program.

**EARLY CHILDHOOD & FAMILY STUDIES ASSOCIATE DEGREE:  
2ND YEAR**

FALL TERM		CREDITS
ED-150	Creative Activities for Children	3
ED-270	Practicum I	4
HDF-141	Parent-Child Relations I: History, Theory & Context	3
ED-100	Introduction to Education	3

*Continued*

**WINTER TERM**

ED-114	Math & Science Instructional Techniques	3
ED-271	Practicum II	4
HDF-142	Parent Child Relations II: Intro to Parenting	3
ED-258	Multicultural Education (or elective)	3

**SPRING TERM**

ED-272	Advanced ED Practicum	4
HS-267	Intervention Strategies: Working w/Families	4
ED-169	Overview of Students w/Special Needs	3
— —	PE/Health elective	2-3
— —	General elective (any college level course)	3

Minimum credits required for degree 92-96

\*Up to 3 credits of ECE-175 may be substituted for HDF-225 - Prenatal, Infant, Toddler Development.

## Electronic Publishing

**CERTIFICATE**

Curriculum focuses on the preparation of professional-looking reports, forms, newsletters, technical and academic papers, display advertising, brochures and business presentations. Course work emphasizes the key skill areas needed for success, including communications, design, computer applications and production. The program focuses on the high-tech administrative assistant skills needed for a high-end administrative support position.

**PROGRAM OUTCOMES**

Students completing this certificate should demonstrate entry-level skills to qualify for jobs in electronic publishing, both printed and on-line.

**CAREERS**

Career opportunities include graphic designer, desktop publisher and production artist.

For information contact Tanya Patrick, ext. 2426 or tanyap@clackamas.edu; Joan Ryan, ext. 2363 or joanr@clackamas.edu

**ELECTRONIC PUBLISHING CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
BA-101	Introduction to Business	4
BA-131	Introduction to Business Computing [C]	4
ART-115	Basic Design: Two Dimensional Design	4
MTH-050	Technical Mathematics I	3
WR-121	English Composition	3

**WINTER TERM**

ART-116	Basic Design: Color Theory & Composition	4
BA-104	Business Math	3
BT-124	Business Editing I	3
BT-172	Introduction to Microsoft Outlook	1
BA-285	Human Relations in Business	4
BT-220P	Desktop Publishing I: PageMaker	3

**SPRING TERM**

ART-225	Introduction to Computer Graphics	3
BA-205	Solving Communication Problems w/Tech. [C]	4
BA-280	Business/CWE	3
BT-181	FrontPage	3
BT-125	Business Editing II	3

Minimum credits required for certificate 52

## Electronics Systems Technology

**CERTIFICATE**

**ASSOCIATE OF APPLIED SCIENCE DEGREE  
PROFESSIONAL UPGRADE**

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 Electric Systems 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 Mike Mattson, ext. 2483 or mattsonm@clackamas.edu

**ELECTRONICS SYSTEMS TECHNOLOGY CERTIFICATE: 1ST YEAR**

<b>FIRST TERM</b>		<b>CREDITS</b>
EET-112	Electronic Test Equipment & Soldering	1
EET-137	DC Circuits	4
EET-139	Principles of Troubleshooting I	2
MTH-065	Algebra II	4
SM-150	Semiconductor Processing I	2
WR-101*	Communication Skills: Occupational Writing	3

<b>SECOND TERM</b>		<b>CREDITS</b>
EET-141	Transient Analysis & Network Theorems	4
EET-157	Digital Logic I	3
MFG-109	Computer Literacy for Technicians [C]	3
MTH-095	Algebra III	4
SP-100*	Basic Speech Communication	3

**THIRD TERM**

EET-127	Semiconductor Circuits I	4
EET-142	AC Circuits	4
EET-257	Digital Logic II	4
MTH-111	College Algebra	5
SM-280	Electronics & Microelectronics/CWE	2

Minimum credits required for certificate 52

**ELECTRONICS SYSTEMS TECHNOLOGY ASSOCIATE DEGREE:  
1ST YEAR**

Complete certificate program.

**ELECTRONICS SYSTEMS TECHNOLOGY ASSOCIATE DEGREE:  
2ND YEAR**

**FOURTH TERM CREDITS**

EET-215	Principles & Applications of MFG Equip Tech I	2
EET-227	Semiconductor Circuits II	3
EET-239	Principles of Troubleshooting II	2
MFG-107	Industrial Safety & OSHA	3
PH-201**	General Physics	5

**FIFTH TERM**

EET-250	Linear Circuits	3
EET-252	Control Systems	3
EET-254	Introduction to Microcontrollers	4
MFG-209	Programming & Automation for Mfg. [C]	3
PH-202**	General Physics	5

**SIXTH TERM**

EET-230	Laser and Fiber Optics	3
MFG-133	Programmable Logic Controllers	3
— —	PE/Health requirement (see page 15)	3
PH-203**	General Physics	5
SM-280	Electronics & Microelectronics/CWE	2

Minimum credits required for degree (requirements & electives) 101

\*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 the Advising & Counseling Center for the transfer requirements of the specific advanced program or school.

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

**ELECTRONICS ENGINEERING TECHNOLOGY  
(OIT Transfer Courses)**

The CCC Manufacturing Technology Department, in partnership with Oregon Institute of Technology (OIT), offers a number of transferable classes into OIT's Electronics Engineering Technology degree program. Contact Mike Mattson at 503-657-6958, ext. 2483 or mattsonm@clackamas.edu for more information.

## 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/intro.htm>

**PROGRAM OUTCOMES**

Program outcomes will include the skills necessary for entry-level positions with public or private sector agencies responsible for preparedness planning and managing of any type of life-threatening disaster.

**CAREERS**

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

For information contact Dick Ashbaugh, ext. 2237 or [dicka@clackamas.edu](mailto:dicka@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 and immunizations are 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 Clackamas Community College Emergency Medical Technology certificate program includes the required Oregon and national EMT-Basic certification and satisfies the first year of the AAS-EMT (Associate of Applied Science, Emergency Medical Technology) degree required for certification as an Oregon EMT-Paramedic. Technicians can pursue advanced training for the AAS-EMT and bachelor degree level upon transfer to an accredited degree-granting institution.

*Continued*

**PROGRAM OUTCOMES**

The EMT program at Clackamas Community College prepares students to begin their careers in EMS and continue their education to the paramedic level. 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 & Rescue, Critical Care Transport or Basic Life Support transport provider. The college CC-EMT (Certificate of Completion - EMT) leads to a career as a paramedic after completion of the AAS-EMT (Associate of Applied Science - EMT) degree at an accredited institution.

For continuing education for healthcare providers see Healthcare Professional Development page 195.

For information contact Merlin Curry, ext. 2274 or merlinc@clackamas.edu

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

**EMERGENCY MEDICAL TECHNOLOGY CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
BI-231	Human Anatomy & Physiology I	4
EMT-101	EMT Basic-Part I	5
EMT-105	Introduction to Emergency Medical Service	3
MTH-065	Algebra II	4
SP-111	Public Speaking	4
<b>WINTER TERM</b>		
BI-232	Human Anatomy & Physiology II	4
CS-120	Survey of Computing [C]	4
EMT-102	EMT Basic-Part II	5
MA-110	Medical Terminology	3
WR-121	English Composition	3
<b>SPRING TERM</b>		
BI-233	Human Anatomy & Physiology III	4
CJA-203	Crisis Intervention	3
EMT-106	Emergency Communications & Patient Transport	3
EMT-107	EMT Rescue	3
SOC-205	Social Stratification & Social System	4
<i>Minimum credits required for certificate</i>		56

Current CPR for Healthcare Providers (AHA or equivalent) is required. A criminal history background check is required.

*Employment Skills Training*

**CERTIFICATE**

The EST certificate provides a quick entry strategy for learning the knowledge and skills necessary to start or change a career path.

Combine 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 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 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 the Career and Employer Resource Center at ext. 2232 or [career@clackamas.edu](mailto:career@clackamas.edu).

**PROGRAM REQUIREMENTS**

A Certificate of Completion is earned by completing at least 12 credits of occupationally related college level classes. For every 3 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 pre-requisites in a plan but can not be part of the EST certificate.

For information contact the Career & Employer Resource Center, ext. 2232 or [career@clackamas.edu](mailto:career@clackamas.edu)

## Energy & Resource Management

**CERTIFICATE  
ASSOCIATE OF APPLIED SCIENCE DEGREE**

This program provides for instruction in traditional and alternative energy generation, distribution, operation, management and leadership.

**PROGRAM OUTCOMES**

The program outcomes include skills for entry-level employment in the energy/utility workforce, application to a related apprenticeship, or articulation to a university with an energy focus.

This program is endorsed by the Utility Training Alliance and the Utility Education Training Alliance (UETA) to generate succession training and workforce development.

**CAREERS**

Career options could include entry-level applied technical trades and engineering consulting, maintenance and warehouse operations, resource specialists in environmental protection, support personnel, service and equipment providers and installers, entry to professional training and technical positions.

For information contact Bob Topping, ext. 4636 or bobt@clackamas.edu

**ENERGY & RESOURCE MANAGEMENT CERTIFICATE:  
1ST YEAR**

FALL TERM		CREDITS
ERM-100	Orientation to Energy & Resource Management [C]	3
ERM-101	Energy and Resource Technology I [C]	3
ERM-107	Career Portfolio [C] or ERM program elective	3
ERM-170	Energy Industry Performance or ERM program elective	2
HPE-296	Health & Fitness for Industry I	2
WR-121	English Composition	3
WINTER TERM		
ERM-102	Energy & Resource Technology II: Electricity [C]	3
ERM-170	Energy Industry Performance, Health & Safety I or ERM program elective	4
MTH-065	Algebra II	4
— —	General elective (any college level course)	3
SPRING TERM		
ERM-103	Energy & Resource Tech. III: Fossils Fuels [C]	3
ERM-170	Energy Industry Performance, Health & Safety I or ERM program elective	6
ERM-180	Energy & Resource Management CWE or ERM program elective	3
PSY-101	Human Relations or other Human Relations requirement (see page 15)	3
HPE-297	Health & Fitness for Industry II	2
<i>Minimum credits required for certificate</i>		47

**ENERGY & RESOURCE MANAGEMENT ASSOCIATE DEGREE:  
2ND YEAR**

FALL TERM		CREDITS
CS-120	Survey of Computing [C] or General elective (any college level course)	3-4
ERM-201	Energy Applications I: Renew. Energy Resources [C]	6
ERM-270	Energy Industry Performance, Health & Safety III or ERM program elective	3
SSC-150	The Columbia Basin: Watershed of the Great Northwest [C]	5
WINTER TERM		
ERM-202	Energy Applications II [C]	6
ERM-108	Career Marketing Strategies [C]	3
ERM-270	Energy Industry Performance, Health & Safety III	3
SSC-151	The Columbia Basin: Watershed of the Great Northwest [C]	5
SPRING TERM		
ERM-203	Energy Applications III [C]	6
ERM-280	Energy Resource Projects/CWE	3
— —	General elective (any college level course)	3
<i>Minimum credits required for degree</i>		93-94

**ENERGY & RESOURCE MANAGEMENT PROGRAM ELECTIVES**

ERM-211	Energy Industrial Organizational Development [C]
ERM-212	Energy Industrial Leadership Development
ERM-214	Energy Industrial Communication Management
ERM-284	Intro to Energy & Resource Management Applications
ERM-285	Intermediate Energy & Resource Management Applications
ERM-286	Advanced Energy & Resource Management Applications

## Fire Science (Wildland)

**CERTIFICATE  
ASSOCIATE OF APPLIED SCIENCE DEGREE**

The Wildland Fire Science program provides training that can lead to seasonal employment in wildland firefighting or to the first step to a career in the forest industry or park service. There are many career tracks in the field of wildland firefighting and forestry. It's exciting work that requires fundamental survival, safety and firefighting training and skills. It is also important to be physically fit, work well in a team environment and respond quickly and efficiently to instruction/commands.

Clackamas Community College is a certified training site recognized by the Pacific Northwest Wildfire Coordinating Group (PNWCG) and the Oregon Department of Forestry. 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.

*Continued*

**PROGRAM OUTCOMES**

The Wildland Firefighting certificate program outcomes include: a basic knowledge of fire behavior, survival and wildland firefighting skills for entry-level wildland firefighting positions, such as Firefighter 1. The two-year Fire Science (Wildland) associate degree expands on the first year to provide advanced training and awareness including environmental regulations, physical and mental preparedness and supervisory and leadership training.

**CAREERS**

The certificate or degree can lead to careers as a wildland firefighter, forest & conservation technician, forest fire inspector or investigator, forest fire prevention specialist, an independent firefighting contractor, or employment in the timber industry.

For information contact Joe Crawford, ext. 2349 or [jcrawford@clackamas.edu](mailto:jcrawford@clackamas.edu); Tom Laugle, ext. 2319 or [toml@clackamas.edu](mailto:toml@clackamas.edu) or visit <http://depts.clackamas.cc.or.us/esh/wildland/>

**FIRE SCIENCE (WILDLAND) CERTIFICATE**

<b>FIRST TERM</b>	<b>CREDITS</b>
FRP-130 Intro to Wildland Firefighting	3
FRP-243 Survivor I: Map, Compass, GPS	2
HD-120 New Student College Success	1
MTH-050 Technical Math I	3-4
or MTH-065 Algebra III	
PE-185 Physical Education	1
(recommended: Weight Training Beg.)	
WR-121 English Composition	3
or WR-101 Communication Skills: Occupational Writing	
<b>SECOND TERM</b>	
ESH-103 Hazardous Waste Operations & Emerg. Response	2
FRP-211 Portable Pumps & Water Use	1
FRP-244 Survivor II: Wilderness	1
HE-252 First Aid/CPR	3
PE-185 Physical Education	1
(recommended: Weight Training Int.)	
— — General elective (any college level course)	3-4
— — Human Relations requirement (see page 15; recommended: PSY-101)	3
<b>THIRD TERM</b>	
FRP-180 Wildland Firefighting/CWE	6
FRP-212 Wildfire Power Saws	2
FRP-216 Driving for the Fire Service	2
PE-185 Physical Education	1
(recommended: Weight Training Adv.)	
— — Computer Literacy requirement (see page 15)	3
— — General elective (any college level course)	6

*Minimum credits required for certificate* 47-49

**FIRE SCIENCE (WILDLAND) ASSOCIATE DEGREE: 1ST YEAR**

Complete certificate program.

**FIRE SCIENCE (WILDLAND) ASSOCIATE DEGREE: 2ND YEAR**

<b>FIRST TERM</b>	<b>CREDITS</b>
ESH-100 Environmental Regulations	3
FRP-131 Advanced Firefighter Training	1
GIS-201 Intro to Geographic Information Systems (GIS)	4
HE-255 Body & Alcohol	3
PE-185 Physical Education	1
— — Science, Social Science elective; or Fire Science (Wildland) program elective (recommended: EMT Basic Part I)	4-5

**SECOND TERM**

FRP-249 Leadership for Firefighters	2
FRP-290 Intermediate Wildland Fire Behavior Fire	3
FRP-215 Fire Operation in the Urban Interface	3
PE-185 Physical Education	1
— — Science, Social Science elective; or Fire Science (Wild land) program elective (recommended: EMT Basic Part I)	4-5

**THIRD TERM**

FRP-200 Basic Incident Command System (ICS)	1
FRP-230 Crew Boss (Single Resource)	2
FRP-231 Engine Boss (Single Resource)	1
FRP-270 Basic Air Operations	1
PE-185 Physical Education	1
FRP-280 Advanced Wildland Firefighting/CWE	6
— — Science, Social Science elective; or Fire Science (Wild land) program elective (recommended: EMT Basic Part I)	4-5

*Minimum credits required for degree* 92-97

Seek advising before registering for Science, Social Science or Fire Science (Wildland) program electives.

**FIRE SCIENCE (WILDLAND) PROGRAM ELECTIVES:**

EMT-101 EMT Basic Part I	
EMT-102 EMT Basic Part II	
EMT-107 EMT Rescue	
ESR-171 Environmental Science	
ESR-172 Environmental Science	
ESR-173 Environmental Science	
FRP-217 Interagency Helicopter Training	
FRP-232 Dozer Boss (Single Resource)	
FRP-234 Ignition Operations	
FRP-259 Task Force/Strike Team Leader	
FRP-260 Interagency Incident Management	
GEO-100 Introduction to Physical Geography	
GS-109 Meteorology	
HE-151 Body & Drugs I	
HOR-226 Plant Identification/Fall	
HOR-228 Plant Identification/Spring	

## Geographic Information Systems (GIS)

### CERTIFICATE ASSOCIATE OF APPLIED SCIENCE DEGREE

The Associate of Applied Science (AAS) and Certificate of Completion in GIS offer instruction in the fields of geography, cartography, computer-aided drafting (CAD), global positioning systems (GPS), database theory and mathematics, in order to create, manipulate and query a GIS. The programs also include 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: survey technician, mapping technician and cartography technician

For information contact Michael Jones, 503-657-6958, ext. 2443 or mikej@clackamas.edu

#### GEOGRAPHIC INFORMATION SYSTEMS CERTIFICATE

FALL TERM		CREDITS
WR-101	Communication Skills: Occupational Writing	3
CDT-104	Professional Computing Basics [C]	3
GEO-100	Introduction to Physical Geography	4
or GEO-110	Cultural & Human Geography	4
GIS-201	Intro to Geographic Info Systems	4
GIS-210	Research Techniques	2

#### WINTER TERM

MTH-085	Technical Math III	3
CS-121	Computer Applications [C]	3
GIS-220	CAD Skills for GIS	4
GIS-281	ArcGIS I	5

#### SPRING TERM

GIS-232	Data Collection & Application	3
GIS-234	Aerial Photo Interpretation	3
GIS-236	Visual Basic Programming for GIS	3
GIS-280	GIS/CWE (certificate only)	4
— —	Human Relations requirement (see page 15)	3

Minimum credits required for certificate 47

#### GEOGRAPHIC INFORMATION SYSTEMS ASSOCIATE DEGREE: 1ST YEAR

Complete certificate program.

#### GEOGRAPHIC INFORMATION SYSTEMS ASSOCIATE DEGREE: 2ND YEAR

SUMMER TERM		CREDITS
GIS-250	GIS Field Work	4

#### FALL TERM

GIS-284	GIS Software Applications	5
GIS-282	ArcGIS II	5
CDT-204	Civil Drafting Technology	3
— —	General elective (any college level course)	6

#### WINTER TERM

GIS-286	Remote Sensing	4
GIS-287	Spatial Modeling and Analysis	5
GIS-288	Advanced Databases for GIS	3
CDT-224	Professional Web Design	3

#### SPRING TERM

GIS-289	Special Project	3
GIS-280	GIS/CWE	6
— —	PE/Health requirement (see page 15)	3

Minimum credits required for degree 97

Note: Terms must be taken in consecutive order.

## Gerontology

### CERTIFICATE

The Gerontology program offers course work in the scientific study of aging for anyone interested in working with older people.

Clackamas offers a one-year certificate in gerontology which can serve as the first year of a two-year associate of applied science degree in Human Services

#### PROGRAM OUTCOMES

This program can provide the skills necessary for entry-level work directly with older people in private and governmental social and health service agencies, senior centers, or for administrative positions in residential facilities for the elderly.

#### CAREERS

Career opportunities may include activity director, senior services case worker, housing and senior advocates and senior housing administrative positions.

For information contact Patricia McIlveen, ext. 2240, or patriciam@clackamas.edu

#### GERONTOLOGY CERTIFICATE

FALL TERM		CREDITS
EC-115	Introduction to Basic Economics	
or EC-201	Principles of Economics: Microeconomics	
or BA-156	Business Forecasting	3-4
PSY-101	Human Relations	
or BA-285	Human Relations in Business	3-4
SOC-230	Perspectives on Aging	4
WR-121	English Composition	
or WR-101*	Communication Skills: Occupational Writing [C]	3
— —	Gerontology program electives	3

\*See current *Schedule of Classes* for sections to satisfy computer literacy requirement.

Continued

**WINTER TERM**

MTH-065	Algebra II	4
SOC-223	Psycho-Social Aspects of Aging	4
SOC-231	Health & Biological Aspects of Aging	4
— —	Gerontology program electives	6

**SPRING TERM**

HS-280	Gerontology/CWE	6
SOC-232	Encounters with Death	4
— —	Gerontology program electives	2

Minimum credits required (requirements + electives) 46-48

Current First Aid and CPR certificates are also required for a certificate in Gerontology.

**GERONTOLOGY PROGRAM ELECTIVES:**

HDF-140	Contemporary American Families
HDF-141	Parent Child Relations I
HS-267	Intervention Strategies Working with Families
HS-120	Basic Caregiver Training
HS-165	Activity Director in Long Term Care
HS-170	Field Experiences in Human Services

## Horticulture

### CERTIFICATE ASSOCIATE OF APPLIED SCIENCE DEGREE

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 CCC campus.

CCC's Horticulture and Landscape programs are the only programs accredited in Oregon by the Professional Landcare 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 degree program. Following the course offerings in the order listed is encouraged unless otherwise advised by the Horticulture advisor. The certificate and associate degree programs include a cooperative work experience class which requires working with a horticultural employer.

**PROGRAM OUTCOMES**

Program outcomes include the skills necessary for entry-level employment into tree and shrub and 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 AAS 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 Elizabeth Howley, Horticulture Advisor, ext. 2389 or ehowley@clackamas.edu

**OSU 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 advisor (up to 45 credits of horticulture classes transfer as part of a bachelor's degree). The Horticulture advisor will work with individual students in order to obtain the most recent transfer information.

**TRANSFER ELECTIVES**

HOR-111	Horticulture Practicum	6
HOR-222	Horticultural Computer Application	2
HOR-226	Plant Identification/Fall	3
HOR-227	Plant Identification/Winter	3
HOR-228	Plant Identification/Spring	3
HOR-234	Intermediate Landscape Design	3
HOR-245	Advanced Landscape Design	3

**HORTICULTURE CERTIFICATE**

		CREDITS
<b>FALL TERM</b>		
CS-090	Computers for New Users [C]	2
HOR-111	Horticulture Practicum/Fall	6
HOR-122	Greenhouse Crops-Potted Plants	
	or HOR-123 Landscape Maintenance	3
HOR-222	Horticultural Computer Applications [C]	2
HOR-226	Plant Identification/Fall	3

**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-227	Plant Identification/Winter	3
MTH-050	Technical Mathematics I	3-5
	or MTH-065 Algebra II (or above)	

**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
SP-100	Basic Speech Communication	3

**SUMMER TERM**

HOR-280	Horticulture/CWE	3
WR-101	Communication Skills: Occupational Writing	3

Minimum credits required for certificate 58-60

**HORTICULTURE ASSOCIATE DEGREE: 1ST YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
CS-090	Computers for New Users [C]	2
HOR-111	Horticulture Practicum/Fall	6
HOR-122	Greenhouse Crops-Potted Plants	3
or HOR-123	Landscape Maintenance	
HOR-222	Horticultural Computer Applications [C]	2
HOR-226	Plant Identification/Fall	3
<b>WINTER TERM</b>		
HOR-130	Plant Propagation Theory	3
or HOR-131	Tree & Shrub Pruning/Winter	
HOR-132	Pesticide Selection & Use	3
HOR-133	Horticulture Practicum/Winter	6
HOR-227	Plant Identification/Winter	3
MTH-050	Technical Mathematics I	3-5
or MTH-065	Algebra II (or above)	
<b>SPRING TERM</b>		
HOR-140	Soils & Fertilizers	3
HOR-142	Greenhouse Crops-Bedding Plants	3
or HOR-145	Turf Installation & Maintenance	
HOR-143	Horticulture Practicum/Spring	6
HOR-228	Plant Identification/Spring	3
<b>SUMMER TERM</b>		
HOR-281	Horticulture/CWE	6

**HORTICULTURE ASSOCIATE DEGREE: 2ND YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
SPN-101	First Year Spanish	4
WR-101	Communication Skills: Occupational Writing	3
— —	Horticulture program electives	6
<b>WINTER TERM</b>		
HOR-230	Equipment Operation & Maintenance	3
— —	Select one: BA-101, BA-211, BA-223, HOR-238	3-4
— —	Horticulture program electives	
<b>SPRING TERM</b>		
HE-252	First Aid/CPR	3
SP-100	Basic Speech Communication	3
— —	Horticulture program electives	6

Minimum credits required for degree (requirements + electives) 92-95

**HORTICULTURE PROGRAM ELECTIVES**

HOR-114	Garden Design	1
HOR-134	Herb Growing & Gardening	1
HOR-144	Basic Pruning	1
HOR-146	Fruit Tree Short Course	1
HOR-147	Marketing Water Efficient Landscaping	1
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-220	Plant Propagation/Fall	3
HOR-223	Flower Arranging	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-233	Plant Propagation/Winter	3
HOR-234	Intermediate Landscape Design	3
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
HOR-237	Disease Identification	2

HOR-238	Landscape Business Operations	3
HOR-239	Tree Climber Training	2
HOR-240	Irrigation & Drainage Practices	3
HOR-241	Nursery Management	3
HOR-242	Plant Propagation/Spring	3
HOR-243	Tree & Shrub Pruning/Spring	3
HOR-244	Environmental Landscape Design	3
HOR-245	Advanced Landscape Design	3
HOR-246	Organic Gardening	3
HOR-247	Hardscape Installation	3
HOR-248	Flower Arranger's Garden/Spring	3
HOR-250	Western Herbs	1
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

*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 PHR (Professional in Human Resources) from the Human Resource Certification Institute. Though this certificate is intended to enhance the qualifications of people already working in the HR field, others may wish to take the classes to advance their own skills and knowledge.

**PROGRAM OUTCOMES**

Completion of this program qualifies the applicant to sit for the HR certificate exam; two years experience is also required before the certificate is issued to the successful applicant. Certification in Human Resource Management, 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 may include human resource manager, human resource assistant and information and records clerk.

For information contact Bill Waters, ext. 5062 or [billw@clackamas.edu](mailto:billw@clackamas.edu)

**HUMAN RESOURCE MANAGEMENT CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
BA-101	Introduction to Business	4
BA-224	Human Resource Management	4
WR-101	Communication Skills: Occupational Writing	3
BA-111	General Accounting I	4
BA-226	Business Law I	4

*Continued*

**WINTER TERM**

BA-285	Human Relations in Business	4
BA-254	Compensation and Benefits	4
BA-206	Management Fundamentals	4
MTH-050	Technical Mathematics I	3
BA-177	Payroll Accounting	3

**SPRING TERM**

BA-229	Employment Law	4
BA-208	Employee Labor Relations	4
BA-217	Budgeting for Managers	3
BA-205	Solving Communication Problems With Tech. [C]	4
BA-280	Business/CWE	3

Minimum credits required for certificate 55

## Human Services

### ASSOCIATE OF APPLIED SCIENCE DEGREE

This two-year program provides a foundation in human service studies, with substantive interdisciplinary knowledge (psychology, sociology, family/human services and health and human development).

**PROGRAM OUTCOMES**

The Human Services degree includes the skills necessary for participants to: 1) assist social group workers and caseworkers with developing, organizing and conducting programs to prevent and resolve problems relevant to human systems and relationships and/or 2) assist and provide support in diverse settings, such as community-based child and family support agencies, early childhood care and education, school systems, aging services field, community outreach organizations and state/local law enforcement agencies.

**CAREERS**

Career opportunities may include social services personnel, gerontology support personnel, criminal/juvenile justice personnel.

For information contact Patricia McIlveen, ext. 2240 or patriciam@clackamas.edu

**HUMAN SERVICES ASSOCIATE DEGREE: 1ST YEAR**

FALL TERM	CREDITS
HS-100 Introduction to Human Services	3
PSY-215 Introduction to Developmental Psychology	4
WR-101 Communication Skills: Occupational Writing	
or WR-121 English Composition	3
— — Human Services program elective	6

**WINTER TERM**

CS-120 Survey of Computing [C]	4
MTH-050 Technical Mathematics I	
or MTH-065 Algebra II or above (except MTH-199, MTH-299)	3-4
PSY-221 Introduction to Counseling	4
— — Human Services program elective	6

**SPRING TERM**

HS-170 Introduction to Field Experience	3
HDF-140 Contemporary American Families	3
SOC-205 Social Stratification and Systems	4
— — Human Services program elective	6

**HUMAN SERVICES ASSOCIATE DEGREE: 2ND YEAR**

FALL TERM	CREDITS
HE-261 Community CPR	1
HS-280 Human Service Generalist I/CWE	4
HDF-260 Understanding Child Abuse & Neglect	3
— — Human Services program elective	6

**WINTER TERM**

HS-154 Community Resources	3
HS-281 Human Service Generalist II/CWE	4
PSY-219 Introduction to Abnormal Psychology	4
— — Human Services program elective	6

**SPRING TERM**

HS-282 Human Service Generalist III/CWE	4
HS-267 Intervention Strategies Working with Families	4
ED-258 Multicultural Education	
or SP-140 Introduction to Intercultural Communication	3-4
— — Human Services program elective	6-10

Minimum credits required for degree 97-103

**HUMAN SERVICES PROGRAM ELECTIVES**

Elective courses must be 100 level or above. They may be chosen from a variety of disciplines depending on student goals for career and further degree completion.

**RECOMMENDED ELECTIVES:**

ED-258	Multicultural Education
SOC-230	Perspectives on Aging
SOC-232	Encounters With Death
HDF-141	Parent Child Relations I
HDF-142	Parent Child Relations II

Many one year certificate programs may be used to satisfy the elective requirements for this degree, including:

- Business Management
- Corrections/Juvenile Corrections
- Early Childhood Education & Family Studies
- Emergency Medical Technician
- Gerontology
- Paraeducator
- Medical Assistant

For information contact the Human Services Advisor, Patricia McIlveen, ext. 2240 or patriciam@clackamas.edu

## Industrial Technology (Apprenticeship)

### ASSOCIATE OF APPLIED SCIENCE DEGREE

The Industrial Technology degree program is designed for students who are completing training or those who received an industry-approved certificate or journey-level certification and wish to earn an associate's degree.

#### PROGRAM OUTCOMES

Many occupations require completion of standardized training that is approved by industry. These occupations vary greatly. Program outcomes for the Industrial Technology program allow individual students to complete such requirements for further work in industrial and technical occupations.

#### CAREERS

Career opportunities will vary with each individual and the type of training the student is completing or the field in which he/she is already employed.

For information contact Tom Laugle, ext. 2319 or [toml@clackamas.edu](mailto:toml@clackamas.edu)

#### INDUSTRIAL TECHNOLOGY ASSOCIATE DEGREE REQUIREMENTS

##### RELATED CLASSES

Industrial Technology students will receive a maximum of 48 credits for technical-related training classes and up to 24 credits of elective occupational classes.

##### RELATED INSTRUCTION COURSES

Completion of one course from each requirement area as specified in the catalog under "Approved Related Instruction Courses" (see page 15). The computer literacy requirement must also be satisfied.

##### ELECTIVE OCCUPATIONAL COURSES

To complete the minimum credit hours required.

*Minimum credits required for degree (requirements + electives)* 90

## 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, but 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, to supplement and apply knowledge acquired in academic courses.

#### 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 Dick Ashbaugh, ext. 2237 or [dicka@clackamas.edu](mailto:dicka@clackamas.edu)

#### JUVENILE CORRECTIONS CERTIFICATE

FALL TERM		CREDITS
CJA-232	Corrections Casework	3
CS-120	Survey of Computing [C]	4
PSY-200	Psychology as a Natural Science	4
PSY-205	Psychology as a Social Science	4
WR-121	English Composition	3
WINTER TERM		
CJA-201	Juvenile Delinquency	3
HE-205	Youth Addiction	3
PSY-219	Introduction to Abnormal Psychology	4
SOC-205	Social Stratification & Social Systems	4
WR-122	English Composition	3
SPRING TERM		
CJA-101	Criminology	3
CJA-203	Crisis Intervention	3
CJA-230	Juvenile Corrections	3
MTH-050	Technical Math I	
	or MTH-065 Algebra II	3-4
PSY-215	Introduction to Developmental Psychology	4
ADDITIONAL REQUIREMENT		
CJA-280	Criminal Justice/Corrections/CWE (can be taken Winter or Spring term)	3

*Minimum credits required for certificate* 54-55

# Landscape

## CERTIFICATE 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 Landcare 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. Degree options include a less than one-year certificate program or a two-year associate degree program. Following the course offerings in the order listed is encouraged unless otherwise advised by the Horticulture advisor. The certificate and associate degree programs include a Cooperative Work Experience class and working with a horticultural employer.

### PROGRAM OUTCOMES

Program outcomes 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 AAS 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 Elizabeth Howley, Horticulture Advisor, ext. 2389 or [ehowley@clackamas.edu](mailto:ehowley@clackamas.edu)

### OSU 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 advisor (up to 45 credits of horticulture classes transfer as part of a bachelor's degree). The Horticulture advisor will work with individual students in order to obtain the most recent transfer information.

### LANDSCAPE CERTIFICATE

FALL TERM		CREDITS
HOR-224	Landscape Installation	3
HOR-225	Principals of Arboriculture	3
HOR-229	Basic Landscape Design	3
HOR-235	Weed Identification	2
HOR-236	Insect Identification	2
WINTER TERM		
HOR-231	Irrigation & Drainage Design	3
HOR-234	Intermediate Landscape Design	3
HOR-238	Landscape Business Operations	3
HOR-239	Tree Climber Training	2
SPRING TERM		
HOR-247	Hardscape Installation	3
<i>Minimum credits required for certificate</i>		27

### LANDSCAPE ASSOCIATE DEGREE: 1ST YEAR

FALL TERM		CREDITS
HOR-111	Horticulture Practicum/Fall	6
HOR-123	Landscape Maintenance	3
HOR-226	Plant Identification/Fall	3
MTH-050	Technical Mathematics I	
	or MTH-065 Algebra II (or above)	3-5
WR-101	Communication Skills: Occupational Writing	3
WINTER TERM		
HOR-131	Tree & Shrub Pruning/Winter	3
HOR-132	Pesticide Selection & Use	3
HOR-133	Horticulture Practicum/Winter	6
HOR-222	Horticulture Computer Applications	2
HOR-227	Plant Identification/Winter	3
SPRING TERM		
HOR-140	Soils & Fertilizers	3
HOR-143	Horticulture Practicum/Spring	6
HOR-145	Turf Installation & Maintenance	3
HOR-228	Plant Identification/Spring	3
— —	Human Relations requirement (see page 15)	3-4

### SUMMER TERM

HOR-281	Horticulture/CWE	6
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### LANDSCAPE ASSOCIATE DEGREE: 2ND YEAR

FALL TERM		CREDITS
HOR-224	Landscape Installation	
	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**

HOR-230	Equipment Operation & Maintenance	3
HOR-231	Irrigation & Drainage Design	3
HOR-234	Intermediate Landscape Design	
or HOR-213	Computer Aided Landscape Design	3
HOR-237	Disease Identification	
or HOR-239	Tree Climber Training	2
HOR-238	Landscape Business Operations	3

**SPRING TERM**

HOR-147	Marketing Water Efficient Landscaping	1
HOR-240	Irrigation & Drainage Practices	3
HOR-243	Tree & Shrub Pruning	
or HOR-245	Advanced Landscape Design	3
HOR- 247	Hardscape Installation	3
HE- 252	First Aid/CPR	3

Minimum credits required for degree 98-101

## Manufacturing Technology

**CERTIFICATE  
ASSOCIATE OF APPLIED SCIENCE DEGREE  
PROFESSIONAL UPGRADE**

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. Our instructional philosophy promotes integrating real-world manufacturing situations with structured theory and practicum in the classroom and laboratory. Many of our classes are taught in a flexible, open-lab format and students may enter the program any term.

Individualized daytime and evening instruction is provided in the operation of machine tools such as: lathes, mills, surface and cylindrical grinders and common machine shop equipment. Included in the degree program is the study of computer numerical control (CNC) programming and machining for milling, turning and electrical discharge machining (EDM), as well as courses in computer-aided manufacturing (CAM) utilizing current industrial CAD/CAM software. Quality control is stressed while students are taught a wide range of measuring and inspection techniques. Other topics include courses offered in welding, materials science and basic electricity. Many students enroll in our 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 technicians.

**SHORT TERM TRAINING**

For students who need a quick-entry strategy into the work force, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information. A short-term training certificate is available. For information contact Mike Mattson, Department Chair, ext. 2483 or mattsonm@clackamas.edu; or the Manufacturing Department, ext. 2062.

**MANUFACTURING ENGINEERING TECHNOLOGY (OIT Transfer Courses)**

The CCC Manufacturing Technology Department, in partnership with Oregon Institute of Technology (OIT), offers a significant number of transferable classes into OIT's Manufacturing Engineering Technology degree program. Contact the Manufacturing Department, ext. 2062 for more information.

**COMPUTER-AIDED DRAFTING/COMPUTER-AIDED MANUFACTURING (CAD/CAM) DEGREE**

See degree program on pages 30-31.

**MANUFACTURING TECHNOLOGY CERTIFICATE**

<b>FIRST TERM</b>	<b>CREDITS</b>
MFG-104 Print Reading	2
MFG-107 Industrial Safety & OSHA	3
MFG-111 Machine Tool Fundamentals I	9
MTH-050* Technical Mathematics I	3
<b>SECOND TERM</b>	
MFG-105 Dimensional Inspection	2
MFG-109 Computer Literacy for Technicians [C]	
or MFG-209 Programming and Automation for Mfg. [C]	3
MFG-112 Machine Tool Fundamentals II	9
WR-101* Communication Skills: Occupational Writing	3
<b>THIRD TERM</b>	
MFG-106 Applied Geometric Dimensioning & Tolerancing for Manufacturing	3
MFG-113 Machine Tool Fundamentals III	6
—**** Manufacturing Technology Program Elective	3-4
MFG-280 Manufacturing Technology/CWE	2
—* Human Relations requirement (see page 15)	3

Minimum credits required for certificate 51-52

*Continued*

**MANUFACTURING TECHNOLOGY ASSOCIATE DEGREE:  
1ST YEAR**

Complete certificate program.

**MANUFACTURING TECHNOLOGY ASSOCIATE 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
MTH-080*	Technical Mathematics II	3

FIFTH TERM		CREDITS
MFG-202	CNC II: Programming & Operation	4
MFG-205	Computer-Aided Manufacturing II	4
— —	Manufacturing Technology Program Elective	3
— —*	PE/Health requirement (see page 15)	3

SIXTH TERM		CREDITS
MFG-203	CNC III: Applied Programming & Operation	3
MFG-206	Computer-Aided Manufacturing III	2
MFG-221	Materials Science	3
MFG-280	Manufacturing Technology/CWE	2
— —*	General elective (any college level course)	3

Minimum credits required for degree 95-96

**MANUFACTURING TECHNOLOGY PROGRAM ELECTIVES  
(3 OR MORE CREDITS)**

CDT-103	Computer-Aided Drafting I	4
CDT-108a	Introduction to Solid Modeling	3
CDT-223	Inventor Fundamentals	3
MFG-113	Machine Tool Fundamentals III	3
MFG-124	Statistical Process Control	3
WLD-150	Welding Processes***	4

Or other technical courses with prior departmental approval

\*\*\*Recommended Manufacturing Technology Program Elective

\*\*\*\*Students seeking to earn the associates degree must take 9 credits of MFG-113

\*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 the Advising & Counseling Center for the transfer requirements of the specific advanced program or school.

## Marketing

### CERTIFICATE

This certificate focuses on identifying customer needs, developing goods and services to satisfy those needs, communicating information about products/services to potential customers and distributing the product.

**PROGRAM OUTCOMES**

Students who successfully complete this certificate should 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 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, ext. 2361 or daleh@clackamas.edu; Joan Ryan, ext. 2363 or joanr@clackamas.edu

**MARKETING CERTIFICATE**

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-131	Introduction to Business Computing [C]	4
BA-224	Human Resource Management	4
WR-121	English Composition	3

WINTER TERM		CREDITS
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		CREDITS
BA-205	Solving Communication Problems w/Tech. [C]	4
BA-211	Financial Accounting I	4
BA-226	Business Law I	4
BA-238	Sales	3
BA-280	Business/CWE	3

Minimum credits required for certificate 47

\* MTH-50 is a prerequisite for BA-104 and students must take MTH-50 or place into a higher-level math class before taking BA-104.

## Marketing & Management

### ASSOCIATE OF APPLIED SCIENCE DEGREE

This program focuses on identifying customer needs, developing goods and services to satisfy those needs, communicating information about products to potential customers and distributing the product to customers. This degree is designed to meet the needs of an entrepreneur who has or starts his own business, as well as to enhance the skills and employability of those already in business and management careers.

**PROGRAM OUTCOMES**

Upon completion of this program, students should 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, ext. 2361 or daleh@clackamas.edu; Joan Ryan, ext. 2363 or joanr@clackamas.edu

**MARKETING & MANAGEMENT ASSOCIATE 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	3

**WINTER TERM**

BA-131	Introduction to Business Computing [C]	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 w/Tech. [C]	4
BA-211	Financial Accounting I	4
BA-226	Introduction to Business Law I	4
BA-238	Sales	3

**MARKETING & MANAGEMENT ASSOCIATE DEGREE: 2ND YEAR**

FALL TERM		CREDITS
BA-206	Management Fundamentals	4
BA-212	Financial Accounting II	4
BA-218	Personal Finance	3
BA-239	Advertising	4
— —	PE/Health requirement (see page 15)	1

**WINTER TERM**

BA-213	Decision Making w/Accounting Information	4
BA-222	Financial Management	3
BA-227	Business Law II	4
EC-201	Principles of Econ: MICRO	4
BA-249	Retailing	3

**SPRING TERM**

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

Minimum credits required for degree 95

\* MTH-50 is a prerequisite for BA-104 and students must take MTH-50 or place into a higher-level math class before taking BA-104.

**MARKETING & MANAGEMENT PROGRAM ELECTIVES**

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

*Medical Assistant*

**CERTIFICATE**

Medical assistants function as members of the healthcare delivery team and perform administrative, clinical and transdisciplinary functions. The Medical Assistant program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), (35 East Wacker Drive, Suite 1970, Chicago, IL 60601-2208 or (312) 553-9355), on recommendation of the Curriculum Review Board of the American Association of Medical Assistants' Endowment (AAMAE).

Admission to the Medical Assistant program is during spring term to enroll for fall classes. Admission is by special application only. Specific skill levels are required in reading, writing and math. Placement tests are required prior to admission to the program. Prerequisites: WR-101 or WR-121 and SP-100 or SP-218 must be completed prior to beginning the Medical Assistant program. Applicants are advised that there is a certain level of dexterity and physical strength involved for successful completion of the program. A physical examination by a licensed healthcare provider, immunizations and a criminal history background check are required. Students will participate in unpaid, supervised externships in the ambulatory care setting.

Application packets with admission procedures and requirements are available from the Enrollment Services Center, the Advising & Counseling Center, or at <http://depts.clackamas.edu/healthsciences>

**PROGRAM OUTCOMES**

Upon successful completion of the program, students will be eligible to sit for the American Association of Medical Assistants (AAMA) National Certification exam. Students will 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, employment in the acute care setting, insurance billing and coding, administration and phlebotomy.

For continuing education for healthcare providers see Healthcare Professional Development page 195.

For information contact Karen Maynard, ext. 2219 or [kmaynard@clackamas.edu](mailto:kmaynard@clackamas.edu)

*Continued*

**MEDICAL ASSISTANT PREREQUISITES**

Complete the following prerequisites before beginning the Medical Assistant program.

COURSE	CREDITS
SP-100 Basic Speech Communication	
or SP-218 Interpersonal Communication	3-4
WR-101 Communication Skills: Occupational Writing	
or WR-121 English Composition	3

**MEDICAL ASSISTANT CERTIFICATE**

**FALL TERM**

BI-055 Introduction to Human Biology	
or BI-102 General Biology (prerequisite: BI-101)	3-4
CS-120 Survey of Computing [C]	4
MA-110 Medical Terminology	3
MA-112 Medical Office Practice	4
MA-145 Medical Coding & Health Info. Management	3

**WINTER TERM**

MA-116 Introduction to Medications	2
MA-117 Clinical Lab Procedures I	2
MA-118 Examination Room Techniques	3
PSY-101 Human Relations	3
MTH-054 Math for Healthcare Professionals	3

**SPRING TERM  
(WEEKS 1-6)**

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

**(WEEKS 7-11)**

MA-119 Medical Assistant Practicum I	4
MA-120 Medical Assistant Practicum II	6

*Minimum credits required for certificate* 53-55

Current First Aid and CPR for Healthcare Providers (AHA or ASHI) are required during practicums and must be taken prior to winter term practicum. A criminal history background check is required.

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 with the exception of MA-110 which may be taken before beginning the program. Core 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 to take the Certified Medical Assistant (CMA) Exam. Direct questions to: AAMA Certification Department; 20 N. Wacker Dr.; Suite 1575; Chicago, IL 60606; E-mail: [certification@aama-ntl.org](mailto:certification@aama-ntl.org); Phone: 800/228-2262.

## *Medical Office Administrative Assistant*

**CERTIFICATE**

The Medical Office Administrative Assistant certificate provides students with a strong foundation of basic skills in front office practice and procedures. Emphasis is placed on critical thinking and human relations skills. Course work includes Related Instruction requirements and industry-standard skill requirements.

**PROGRAM OUTCOMES**

Upon completion of this program, students should be qualified to work successfully in the front office of a medical office, clinic or patient-services business. Students should have the hard and soft skills needed to work under pressure, meeting the changing and diverse office needs of staff and patients.

**CAREERS**

Career opportunities may include opportunities to work at physicians' offices, hospitals, drug firms, insurance companies and medical departments of the government or large corporations.

For information contact Carol Middendorff, ext. 2412 or [carolm@clackamas.edu](mailto:carolm@clackamas.edu)

**MEDICAL OFFICE ADMINISTRATIVE ASSISTANT CERTIFICATE**

**FALL TERM** **CREDITS**

BI-055 Introduction to Human Biology	
or BI-101 General Biology	3-4
BT-112 Front Desk/Medical Office Practice	3
BT-124 Business Editing I	3
BT-160 Word I [C]	3
MA-110 Medical Terminology	3

**WINTER TERM**

BA-211 Financial Accounting I	4
or BA 111 General Accounting 1	
BA-285 Human Relations in Business	4
BA-104* Business Math	3
BT-125 Business Editing II	3
BT-145 Medical Insurance and Billing	3

**SPRING TERM**

BA-101 Introduction to Business	4
BA-280 Business/CWE	3
BT-113 Medical Coding I for the Physician's Office	3
WR-121 English Composition	3
— — Medical Office Administrative Assistant program elective	3

*Minimum credits required for certificate* 48-49

\* For this certificate, this course meets the Related Instruction Computation requirement.

**MEDICAL OFFICE ASSISTANT PROGRAM ELECTIVES**

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

# Microelectronics Systems Technology

**CERTIFICATE  
ASSOCIATE OF APPLIED SCIENCE DEGREE  
PROFESSIONAL UPGRADE**

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.

**CAREERS**

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

For information contact Mike Mattson, ext. 2483 or mattsonm@clackamas.edu

**MICROELECTRONICS SYSTEMS TECHNOLOGY CERTIFICATE**

<b>FIRST TERM</b>		<b>CREDITS</b>
EET-112	Electronic Test Equipment & Soldering	1
EET-137	DC Circuits	4
EET-139	Principles of Troubleshooting I	2
MFG-107	Industrial Safety & OSHA	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-141	Transient Analysis & Network Theorems	4
EET-157	Digital Logic I	3
ESH-100	Environmental Regulations	2
MFG-109	Computer Literacy for Technicians [C]	3
MTH-080*	Technical Mathematics II	3
SM-160	Semiconductor Processing II	2
<b>THIRD TERM</b>		
EET-127	Semiconductor Circuits I	4
EET-142	AC Circuits	4
MTH-085*	Technical Mathematics III	3
SM-170	Semiconductor Processing III	2
SM-280	Electronics & Microelectronics/CWE	2
SP-100*	Basic Speech Communication	3
<i>Minimum credits required for certificate</i>		53

**MICROELECTRONICS SYSTEM TECHNOLOGY ASSOCIATE  
DEGREE: 1ST YEAR**

Complete certificate program.

**MICROELECTRONICS SYSTEMS TECHNOLOGY ASSOCIATE  
DEGREE: 2ND YEAR**

<b>FOURTH TERM</b>		<b>CREDITS</b>
CH-104	Introductory Chemistry	5
EET-215	Principles & Applications of Mfg. Equip. Tech.	2
EET-239	Principles of Troubleshooting II	2
MFG-104	Print Reading	2
— —	Human Relations requirement (see page 15)	3
<b>FIFTH TERM</b>		
EET-250	Linear Circuits	3
MFG-140	Fluid Power	3
MFG-209	Programming and Automation for Mfg. [C]	3
SM-136	Photolithography	2
SM-280	Electronics & Microelectronics/CWE	2
TPH-100	Technical Physics	3
<b>SIXTH TERM</b>		
EET-230	Laser and Fiber Optics	3
MFG-124	Statistical Process Control	3
MFG-133	Programmable Logic Controllers	3
SM-229	Vacuum Technology	2
— —	PE/Health requirement (see page 15)	3

*Minimum credits required for degree (requirements & electives)* 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 the Advising & Counseling Center for the transfer requirements of the specific advanced program or school.

**ELECTRONICS ENGINEERING TECHNOLOGY  
(OIT Transfer Courses)**

The Manufacturing Technology Department, in cooperation with Oregon Institute of Technology (OIT), offers a number of transferable microelectronics classes into OIT's Electronics Engineering Technology degree program. Contact Mike Mattson at 503-657-6958, ext. 2483 or mattsonm@clackamas.edu, for more information.

## 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 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, ext. 5226 or [brainr@clackamas.edu](mailto:brainr@clackamas.edu)

### MUSIC TECHNOLOGY CERTIFICATE

FALL TERM		CREDITS
MUS-142	Intro to Electronic Music: MIDI Sequencing I	3
MUS-107	Intro to Audio Recording I	3
MUS-140	Careers in Music	3
WR-101	Communication Skills: Occupational Writing	
— or WR-121	English Composition	3
— —	Music Technology program basics (see list)	3-4
— —	Music Technology program electives (see list)	2-4
WINTER TERM		
MUS-143	Intro to Electronic Music: MIDI Sequencing II	3
MUS-108	Intro to Audio Recording II	3
MUS-141	Intro to the Music Business [C]	3
MTH-050	Technical Mathematics I	
— —	or higher levels of math may be substituted	3-5
— —	Music Technology program basics	3-4
— —	Music Technology program electives	2-4
SPRING TERM		
MUS-144	Intro to Electronic Music: MIDI Sequencing III	3
MUS-109	Intro to Audio Recording III	3
SP-100	Basic Speech Communication	
	(or SP-126, SP-218, SP-140)	3-4
MUS-280	Music/CWE	2
— —	Music Technology program basics	3
— —	Music Technology program electives	2

Minimum credits required for certificate

50-61

### MUSIC TECHNOLOGY PROGRAM BASICS

Complete 9 credits from the following:

MUP-100	Individual Instruction—Instrument or Voice	1
MUS-101	Music Fundamentals	3
MUS-102	Music Fundamentals	3
MUS-103	Music Fundamentals	3
MUS-105	Music Appreciation	3
MUS-131	Piano for Pleasure I	1
MUS-132	Piano for Pleasure II	1
MUS-133	Piano for Pleasure III	1
MUS-134	Group Voice I	1
MUS-135	Group Voice II	1
MUS-136	Group Voice III	1
MUS-137	Group Guitar I	1
MUS-138	Group Guitar II	1
MUS-139	Group Guitar III	1
MUS-202	History of Classical Music	4
MUS-205	History of Jazz	4
MUS-206	History of Rock Music	4

### MUSIC TECHNOLOGY PROGRAM ELECTIVES

Complete 6 credits from the following:

MUS-101	Music Fundamentals	3
MUS-102	Music Fundamentals	3
MUS-103	Music Fundamentals	3
MUS-105	Music Appreciation	3
MUS-130	Music and Media	1
MUS-131	Piano for Pleasure I	1
MUS-132	Piano for Pleasure II	1
MUS-133	Piano for Pleasure III	1
MUS-134	Group Voice I	1
MUS-135	Group Voice II	1
MUS-136	Group Voice III	1
MUS-137	Group Guitar I	1
MUS-138	Group Guitar II	1
MUS-139	Group Guitar III	1
MUS-145	Intro to Digital Sound, Video & Animation	3
MUS-146	Entertainment Law & New Media	3
MUS-147	Music, Sound & Moviemaking	1
MUS-148	Live Sound Engineering	3
MUS-202	History of Classical Music	4
MUS-205	History of Jazz	4
MUS-206	History of Rock Music	4
MUP-100	Individual Lessons: Instrumental/Vocal	1
MUP-102	Concert Band	2
MUP-104	Pep Band/Combo-Improv	1
MUP-105	Jazz Ensemble	2
MUP-121	Clackamas Chorale	1
MUP-122	Chamber Choir	2
MUP-125	Jazz Singers/Mainstream	2
MUP-141	College Orchestra	1
MUP-241	College Orchestra	1

## Network & Microcomputer Specialist

### CERTIFICATE ASSOCIATE OF APPLIED SCIENCE DEGREE

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. Cooperative Work Experience (CWE) is supervised on-the-job employment that supplements the academic classroom environment.

Prerequisites for first term classes include completed course work or placement out of CS-120 Survey of Computing, WR-095 Paragraph to Essay and MTH-065 Algebra II. This program is an open program, meaning that students may take any class in the program for which they have completed the prerequisite. Note: Placement at a level of math higher than MTH-092 does not satisfy the MTH-092 requirement.

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

For information contact Debra Carino, ext. 5198 or dcarino@clackamas.edu

### NETWORK & MICROCOMPUTER CERTIFICATE

FALL TERM		CREDITS
CS-121	Computer Applications [C]	3
CS-140	Operating Systems I [C]	4
CS-160	Computer Tech Orientation [C]	2
CS-225	Computer End-User Support [C]	3
MTH-092	Math for Computer Technicians	4
WINTER TERM		
CS-140D	Operating Systems I: Command Line [C]	3
CS-179	Data Communications Concepts [C]	3
CS-227	PC Hardware & Repair I [C]	4
CS-240W	Operating Systems II: Windows [C]	3
WR-101	Communications Skills: Occupational Writing	
or WR-121	English Composition	3
SPRING TERM		
CS-125H	HTML & Web Site Design [C]	3
CS-228	PC Hardware & Repair II [C]	4
CS-279W	LAN I: Windows Server Administration [C]	4
CS-280	Computer Science/CWE	3
— —	Human Relations requirement (see page 15; recommended: BA-285 or PSY-101)	3-4

Minimum credits required for certificate

49-50

### NETWORK & MICROCOMPUTER SPECIALIST ASSOCIATES OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

### NETWORK & MICROCOMPUTER SPECIALIST ASSOCIATES OF APPLIED SCIENCE DEGREE: 2ND YEAR

#### FALL TERM

CS-135DB	Advanced Database [C]	3
CS-140U	Operating Systems I: Linux/Unix [C]	3
CS-229	Network System Repair & Troubleshooting [C]	4
CS-288W	LAN II: TCP/IP [C]	4
— —	Network & Microcomputer program elective	3-4

#### WINTER TERM

CS-240U	Operating Systems II: Linux/Unix [C]	3
CS-279N	LAN I: Novell Administration [C]	4
CS-287X	Microsoft Exchange Server [C]	2
CS-289I	Web Server Administration [C]	2
HE-252	First Aid	
or HPE-295	Health & Fitness for Life	3
— —	Network & Microcomputer program elective	3-4

#### SPRING TERM

CS-280	Computer Science/CWE	6
CS-284	Network Security [C]	3
CS-289A	Web Server Administration: Apache [C]	2
— —	Network & Microcomputer program elective	3-4

Minimum credits required for degree

97-101

### NETWORK & MICROCOMPUTER PROGRAM ELECTIVES

Complete at least 9 credits from the following:

BA-101	Introduction to Business	4
BA-103	Business Strategies for Computer Consultants	3
— —	Any computer science course numbered 125 or above except: CS-178, CS-178E and CS-295E	

Note: Students may not take more than 6 credits of CWE in a term.

## Nursing

### ASSOCIATE OF APPLIED SCIENCE DEGREE

The Nursing program is a limited entry, six term program leading to an Associate of Applied Science in Nursing which is approved by the Oregon State Board of Nursing.

Admission into the nursing program is by special application only. A physical examination by a licensed healthcare provider, immunizations and a criminal history background check are required. Drug use and or conviction of a felony may result in the Oregon State Board of Nursing denying licensure.

#### PROGRAM OUTCOMES

Upon completion of the program, graduates are eligible to take the national examination (NCLEX-RN) for registered nurse licensure. Students will be prepared for entry level employment as a RN.

CCC Nursing Program students who are interested in earning a bachelor's degree may apply for admission to OHSU, Bachelor of Science in Nursing program and have their CCC credits apply toward completion.

Continued

**CAREERS**

Career opportunities may include but are not limited to entry level employment as a registered nurse in the acute care setting, sub-acute care setting and the ambulatory care setting.

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

For continuing education for healthcare providers see Healthcare Professional Development page 195.

**NURSING ASSOCIATE DEGREE: PREREQUISITES**

COURSE		CREDITS
BI-231	Human Anatomy/Physiology I	4
BI-232	Human Anatomy/Physiology II	4
BI-233	Human Anatomy/Physiology III	4
BI-234	Introductory Microbiology	4
WR-121	English Composition	3
CS-120	Survey of Computing [C] (or equivalent)	0-4

NOTE: Courses listed above have prerequisites. See course descriptions for those requirements. Courses must be completed by the end of Summer Term 2006.

**Beginning Fall 2007**, curricular changes will take place in the nursing program. The goal of these changes is to deliver a competency-based curriculum developed in collaboration with OHSU and other community colleges around the state (Oregon Consortium for Nursing Education—OCNE) that can ultimately culminate in a Bachelor's of Science Degree in Nursing. This curriculum transformation will require changes to the prerequisites that are required for admission to the nursing program. Please refer to the program website at <http://depts.clackamas.edu/healthsciences/nursing.htm>

**NURSING ASSOCIATE DEGREE: 1ST YEAR**

FALL TERM		CREDITS
MTH-054**	Math For Health Care Professionals	3
NUR-101	Nursing I	4
NUR-101C	Clinical/Lab Application	4
NUR-112	Discipline of Professional Nursing I	1
PHC-211*	Pharmacology I	2
— —	CPR Certification or PE-185	0-1

**WINTER TERM**

NUR-102	Nursing II	4
NUR-102C	Clinical/Lab Application	4
NUR-113	Discipline of Professional Nursing II	1
PHC-212*	Pharmacology II	2

**SPRING TERM**

NUR-103	Nursing III	4
NUR-103C	Clinical/Lab Application	4
NUR-114	Discipline of Professional Nursing III	1

**ADDITIONAL REQUIRED FIRST YEAR COURSES:**

FN-225*+	Nutrition	4
PSY-215*+	Introduction to Developmental Psychology	4
— —*+	Nursing program elective	3

**NURSING ASSOCIATE DEGREE: 2ND YEAR**

FALL TERM		CREDITS
NUR-201	Nursing IV	4
NUR-201C	Clinical/Lab Application	6
NUR-212	Discipline of Professional Nursing IV	1

**WINTER TERM**

NUR-202	Nursing V	4
NUR-202C	Clinical/Lab Application	6
NUR-213	Discipline of Professional Nursing V	1
— —*	Nursing program elective	3

**SPRING TERM**

NUR-203	Nursing VI	4
NUR-203C	Clinical/Lab Application	6
NUR-214	Discipline of Professional Nursing VI	1
— —*	Nursing program elective	3

*Minimum credits required for degree* 103-108

\* Courses considered support courses may be taken prior to admission to the Nursing program.

\*\*May not be substituted or waived.

+ Courses which must be completed prior to fall term of the second year.

Students must achieve "C" or higher grades in all required courses (including prerequisites) 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 in two academic years.

Current CPR for Healthcare Providers (AHA or ASHI) is required prior to fall term. A criminal history background check is required.

**NURSING PROGRAM ELECTIVES**

ANT-103	Cultural Anthropology	4
ASL-101	American Sign Language	4
ASL-102	American Sign Language	4
ASL-103	American Sign Language	4
ASL-201	American Sign Language	3
ASL-202	American Sign Language	3
ASL-203	American Sign Language	3
CH-106	Introductory Chemistry	5
CJA-203	Crisis Intervention	3
CLA-100	Introduction to Healthcare	2
HD-144	Assertive Communication	1
HD-145	Stress Management	1
HD-146	Values Clarification	1
HD-147	Decision Making	1
HD-148	Dealing With Depression	1
HD-153	Managing Conflict in Your Life	1
HD-154	Building Self-Confidence	1
HE-151	Body & Drugs I	3
HE-205	Youth Addictions	3
HE-249	Mental Health	3
HE-250	Personal Health	3
HE-255	Body & Alcohol	3
MA-110	Medical Terminology	3
MA-115	Phlebotomy	1
MTH-095	Algebra III	4
MTH-111	College Algebra	5
MTH-243	Probability & Statistics	4
NUR-160	Fluid & Electrolytes	2
NUR-217	EKG Interpretation	1
NUR-288	Physical Assessment	3
PHL-102	Ethics	4
PHL-103	Critical Reasoning	4

PHL-205	Moral Issues	4
PSY-101	Human Relations	3
PSY-200	Psychology as a Natural Science	4
PSY-205	Psychology as a Social Science	4
PSY-214	Introduction to Personality	4
PSY-216	Introduction to Social Psychology	4
PSY-218	Introduction to Experimental Psychology	4
PSY-219	Introduction to Abnormal Psychology	4
PSY-221	Introduction to Counseling	4
PSY-231	Introduction to Human Sexuality	4
PSY-240	Interpersonal Awareness & Growth	4
SOC-204	Introduction to Sociology	4
SOC-205	Social Stratification and Social System	4
SOC-206	Institutions and Social Change	4
SOC-223	Psycho-Social Aspects of Aging	4
SOC-225	Social Problems	4
SOC-230	Perspectives on Aging	4
SOC-231	Health & Biological Aspects of Aging	3
SOC-232	Encounters with Death	4
SP-126	Communication Between Sexes	4
SPN-101	First-Year Spanish	4
SPN-102	First-Year Spanish	4
SPN-103	First-Year Spanish	4
SPN-120	Spanish for Health Professionals	3
SPN-201	Second-Year Spanish	4
SPN-202	Second-Year Spanish	4
SPN-203	Second-Year Spanish	4
WR-122	English Composition	3
WR-123	English Composition	3
WR-227	Technical Report Writing [C]	3

NOTE: Some of the courses listed above have prerequisites. See course descriptions for those requirements.

## 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 and classroom instruction to be employable. The program is open-entry/open-exit, allowing students to begin their training at any time.

Students participate in a supervised and structured work-based training in addition to classroom instruction. The program utilizes local businesses as training sites. Students choose training from many different occupational areas.

Individualized training plans are developed in consultation 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 occupations, depending on the goals, skills and aptitude of the student and the availability of local training sites.

For information contact the Occupational Skills office at ext. 2085 or ext. 2232.

### OCCUPATIONAL SKILLS TRAINING CERTIFICATE

#### PROGRAM REQUIREMENTS

OST-180	Occupational Skills Training	24
— —	Occupational Related Courses	15

#### RELATED INSTRUCTION REQUIREMENTS

WR-101	Communication Skills: Occupational Writing	3
MTH-050	Technical Mathematics I	3
— —	Computer Literacy requirement (see page 15)	2-3
— —	Human Relations requirement (see page 15)	3

Minimum credits required for certificate 50-51

## 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 completing this program should 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.

### CAREERS

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

For information contact Tanya Patrick, ext. 2426 or tanyap@clackamas.edu

### OFFICE ASSISTANT CERTIFICATE

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-104*	Business Math	3
BT-122	Keyboarding Skill Building	2
BT-124	Business Editing I	3
BT-160	Word I [C]	3

Continued

**WINTER TERM**

BA-285	Human Relations in Business	4
BT-125	Business Editing II	3
BT-161	Word II [C]	3
BT-172	Introduction to Microsoft Outlook	1
BT-176	Excel [C]	3
WR-121	English Composition	3

**SPRING TERM**

BA-280	Business/CWE	3
BA-111	General Accounting I	
or BA-211	Financial Accounting I	4
BT-170	Access [C]	3
BT-216	Office Procedures	4
BT-262	Integrated Projects [C]	
or BT-181	FrontPage	3

Minimum credits required for certificate 49

\* MTH-50 is a prerequisite for BA-104 and students must take MTH-50 or place into a higher-level math class before taking BA-104.

## Paraeducator

### CERTIFICATE

The Paraeducator certificate program is designed to meet the professional development needs of teacher assistants. 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-need 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 that are scheduled in late afternoons 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 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 program provides more than half the necessary credits for the two-year requirement as well as a strong foundation in education and teaching. Completion of the remaining requirements include the 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 CCC Paraeducator Certificate as part of a 90 credit associate of general studies. Talk with a staff member in the Advising & Counseling Center at CCC, or Paula Hamm at ext. 2804 for requirements.

**CAREERS**

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

For information contact Paula Hamm, ext. 2804 or paulah@clackamas.edu

**PARAEDUCATOR CERTIFICATE**

**FALL TERM**

	<b>CREDITS</b>
ED-100 Introduction to Education	3
ED-131 Instructional Strategies	3
ED-229 Learning and Development	3
WR-121 English Composition	3

**WINTER TERM**

ED-113 Instructional Strategies (Language Arts)	3
ED-169 Overview of Students with Special Needs	3
ED-200 Foundations of Education	3
ED-280 Education/Cooperative Work Experience	3-6

**SPRING TERM**

CS-121E Computer Applications for Educators [C]	3
ED-114 Instructional Strategies (Math/Science)	3
ED-130 Classroom Management	3
ED-254 Instructional Strategies (ELL students)	3

**SUMMER TERM**

ED-235 Educational Technology	3
ED-258 Multicultural Education	3
MTH-065 Algebra II	4
RD-090 Intermediate Reading Skills*	3

Minimum credits required for certificate 49-52

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

## 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 personal and professional skills and those who might be interested in pursuing the Project Management two-year AAS degree.

**PROGRAM OUTCOMES**

Program outcomes include the skills necessary for gaining 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 Bill Waters, ext. 5062 or billw@clackamas.edu

**PROJECT MANAGEMENT CERTIFICATE**

COURSE		CREDITS
BA-120	Project Team Tools	3
BA-121	Workshop: Project Management	3
BA-122	Teamwork: Project Management	3
BA-123	Leadership and Motivation: Project Management	3
BA-124	Negotiation: Project Management	3
BA-125	Risk Management: Project Management	3
BT-177	Microsoft Project	3

Minimum credits required for certificate 21

## Project Management

### ASSOCIATE OF APPLIED SCIENCE DEGREE

Upon completion of the two-year AAS program, students are qualified to sit for the national certification examination in project management and to receive the PMP professional designation.

#### PROGRAM OUTCOMES

Students completing this program should 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 complex program outcome skills include project and business design, budgeting, team management, project management and project evaluation.

#### CAREERS

Careers may include construction project manager, cost estimator and educational project manager.

For information contact Bill Waters, ext. 5062 or [billw@clackamas.edu](mailto:billw@clackamas.edu)

### PROJECT MANAGEMENT ASSOCIATE DEGREE: 1ST YEAR

FALL TERM		CREDITS
BA-101	Introduction to Business	4
BA-120	Project Team Tools	3
BA-122	Teamwork: Project Management	3
MTH-065	Algebra II	4
WR-101	Communication Skills: Occupational Writing	3

#### WINTER TERM

BA-123	Leadership and Motivation: Project Management	3
BA-131	Introduction to Business Computing [C]	4
BA-206	Management Fundamentals	4
BA-226	Business Law I	4

#### SPRING TERM

BA-124	Negotiation: Project Management	3
BA-125	Risk Management: Project Management	3
BA-217	Budgeting for Managers	3
BA-285	Human Relations in Business	4
BT-177	Microsoft Project	3

### PROJECT MANAGEMENT ASSOCIATE DEGREE: 2ND YEAR

FALL TERM		CREDITS
BA-111	General Accounting I	4
BA-121	Project Management Workshop	3
BA-223	Principles of Marketing	4
BA-280	Business/CWE	3
—	PE/Health requirement (see page 15)	1

### WINTER TERM

BA-160	Purchasing I	3
BA-267	Organizational Development and Behavior	6
BA-280	Business/CWE	3

### SPRING TERM

BA-161	Purchasing II	3
BA-225	Business Report Writing	3
BA-268	Applied Project Demonstration	6
BA-281	Business CWE	3

Minimum credits required for degree 90

## Retail Management

### CERTIFICATE

A less-than-one-year program. 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 completing this certificate, students should 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 Dale Hatfield, ext. 2361 or [daleh@clackamas.edu](mailto:daleh@clackamas.edu); Joan Ryan, ext. 2363 or [joanr@clackamas.edu](mailto:joanr@clackamas.edu)

### RETAIL MANAGEMENT CERTIFICATE

COURSE		CREDITS
BA-104	Business Math	3
BA-111	General Accounting I	4
BA-131	Intro to Business Computing	4
BA-205	Solving Communication. Problems w/Tech	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
SP-111	Public Speaking	4

Minimum credits required for certificate 38

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

## Retail Management

### CERTIFICATE

#### *Pending State Approval*

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. Coursework is specific to the retail industry and focuses on preparing retail employees for upward mobility.

#### PROGRAM OUTCOMES

Upon completing this certificate, students should 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 Dale Hatfield at ext. 2361 or [daleh@clackamas.edu](mailto:daleh@clackamas.edu) or Joan Ryan at ext. 2363 or [joanr@clackamas.edu](mailto:joanr@clackamas.edu)

#### RETAIL MANAGEMENT CERTIFICATE

##### FALL TERM

WR-101	Communication Skills: Occupational Writing	3
or WR-121	English Composition	3
BA-104*	Business Math	3
BA-131	Introduction to Business Computing [C]	4
SP-111	Public Speaking	4

##### WINTER TERM

BA-111	General Accounting I	4
BA-205	Solving Communication Problems with Technology [C]	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

Minimum credit required for certificate 45

\* MTH-50 is a prerequisite for BA-104 and students must take MTH-50 or place into a higher-level math class before taking BA-104.

## Supervisory Training

### CERTIFICATE PROFESSIONAL UPGRADE

A less-than-one-year program. This program is designed for those students who are interested in supervisory positions, employees desiring advancement to supervisory positions and supervisors seeking to upgrade supervisory skills.

#### PROGRAM OUTCOMES

Students completing this program should be prepared for employment in a supervisory role or to move upward with their current employer in career advancement.

#### CAREERS

Career opportunities may include supervisor or manager of retail sales work force, supervisor or manager of personal services workers or supervisor or manager of non-retail sales workers.

For information contact Dale Hatfield, ext. 2361 or [daleh@clackamas.edu](mailto:daleh@clackamas.edu)

#### SUPERVISORY TRAINING CERTIFICATE

COURSE		CREDITS
BA-205	Solving Comm. Problems w/Technology [C]	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	3

Minimum credits required for certificate 22

## Utility Workforce Readiness

### CERTIFICATE

#### *Pending State Approval*

A less-than-one-year program. Earn a utility industry workforce readiness certificate offered as part of the Energy and Resource Management program. Curriculum is based on the themes, concepts and issues directly related to technical utility careers.

#### PROGRAM OUTCOMES

Program outcomes include prepare students for a technical career in the utility industry. To recognize safety as the first and foremost guide to practice. Accept personal responsibility to comply with all laws, performance standards, and service area requirements. Protect wildlife, habitat, and surrounding area from harm while executing work assignments. Produce reliable results that blend safety and performance into a unified utility worker practice. Operate and maintain vehicles, tools and equipment as a signature of personal practice. Advance the reputation of the company and trade from a personal demonstration of a premier practice. Communicate with others to plan and deliver a work process.

**CAREERS**

The certificate is designed to prepare a student for entry into multiple technical jobs in the utility industry such as (ground-worker, general laborer, or technical assistant) in the utility industry. Due to an aging workforce the utility industry is gearing up to replace their soon to be retiring workforce. The training provided in this certificate is in anticipation of the jobs that soon will be available.

For information contact Bob Topping, ext. 4636 or bobt@clackamas.edu

**UTILITY WORKFORCE READINESS CERTIFICATE**

<b>FIRST TERM</b>		<b>CREDITS</b>
ERM-107	Career Portfolio	3
ERM-170	Energy Industry Performance, Health & Safety I	12
<b>SECOND TERM</b>		
PSY-101	Human Relations	3
ERM-270	Energy Industry Performance, Health & Safety II	6
ERM-286	Adv. Energy & Resource Management Applications	6
<i>Minimum credits required for certificate</i>		30

*Water & Environmental Technology*

**CERTIFICATE  
ASSOCIATE OF APPLIED SCIENCE DEGREE  
PROFESSIONAL UPGRADE**

The Water & Environmental Technology program provides professional/technical classes combined with field experiences. 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 prerequisite: MTH-065 Algebra II must be completed prior to fall term entry.

**PROGRAM OUTCOMES**

Program outcomes 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 may include water and/or liquid waste treatment plant and system operator, environmental science technician and environmental engineering technician. Careers may also include environmental lab technician, source control technician, surface water specialist and environmental regulator.

For information contact John Lewis, ext. 2206 or jlewis@clackamas.edu

**WATER & ENVIRONMENTAL TECHNOLOGY CERTIFICATE**

<b>FALL TERM</b>		<b>CREDITS</b>
CH-104	Introductory Chemistry	
or CH-221	General Chemistry	5
MTH-082*	Math for Water Technology	2
WQT-110	Wastewater Operations I	3
WQT-111	Waterworks Operations I	3
WR-101	Communication Skills: Occupational Writing	
or WR-121	English Composition	3
— —	Human Relations requirement (see page 15; recommended: PSY-101)	3

<b>WINTER TERM</b>		
BI-204	Elementary Microbiology	4
MTH-082*	Math for Water Technology	2
WQT-120	Wastewater Operations II	3
WQT-121	Waterworks Operations II	3
WQT-122	Water Distribution & Wastewater Collect. Systems	3
WQT-123	Environmental Chemistry I	3

<b>SPRING TERM</b>		
CS-120	Survey of Computing [C]	4
WQT-130	Wastewater Plant Operations III	4
WQT-131	Water Treatment	4
WQT-132	Collection & Distribution Lab	1
WQT-134	Environmental Chemistry II	2
WQT-180	Water & Environmental Projects I	5
<i>Minimum credits required for certificate</i>		57

\*4 credits of MTH-082 are required for the certificate and may not be substituted or waived.

**WATER & ENVIRONMENTAL TECHNOLOGY ASSOCIATE DEGREE:  
1ST YEAR**

Complete certificate program.

**WATER & ENVIRONMENTAL TECHNOLOGY ASSOCIATE DEGREE:  
2ND YEAR**

<b>FALL TERM</b>		<b>CREDITS</b>
WQT-241	Aquatic Microbiology	4
WQT-242	Hydraulics of Water & Wastewater	3
WQT-245	Instrumentation & Control	4
WQT-280	Water & Environmental Projects II	5
<b>WINTER TERM</b>		
MTH-095	Intermediate Algebra	
or MTH-111	College Algebra	4-5
— —	Geography elective (recommended: GEO-130)	4
— —	Speech elective (recommended: SP-111)	3-4

*Continued*

**SPRING TERM**

CS-121	Computer Applications [C]	3
HE-252	First Aid/CPR	3
— —	General elective (any college level course)	3-4

Minimum credits required for degree (requirements + electives) 93-96

**WATER & ENVIRONMENTAL TECHNOLOGY PROGRAM ELECTIVES**

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

**PROFESSIONAL UPGRADE COURSES**

The following courses are designed to upgrade professional skills and in some cases assist in preparation for state certification examinations.

WQT-009	Cross Connect. Backflow Assembly Tester (4.0 CEU)
WQT-009	Cross Connection Specialist Course (3.2 CEU)
WQT-009	Water & Wastewater Short Schools (2.1 & 2.3 CEU)
WQT-009	Equipment Maintenance & Repair (CEU)
WQT-009	Pretreatment (CEU)
WQT-009	Certification Review/Wastewater Operators (CEU)
WQT-009	Certification Review/Waterworks Operators (CEU)
WQT-010	Wastewater Operations I 3 credits
WQT-011	Waterworks Operations I 3 credits
WQT-020	Wastewater Operations II 3 credits
WQT-021	Waterworks Operations II 3 credits
WQT-030	Wastewater Operation III 3 credits
WQT-031	Water Treatment 3 credits

## Water/High-Purity Production

**CERTIFICATE  
PROFESSIONAL UPGRADE**

A less-than-one-year program. The High Purity Water Production 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.

Program prerequisite: MTH-065 Algebra II must be completed prior to fall term entry.

**PROGRAM OUTCOMES**

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

**CAREERS**

Career opportunities may include high-purity lab technician and high-purity production technician.

For information contact John Lewis, ext. 2206 or jlewis@clackamas.edu

**HIGH PURITY WATER CERTIFICATE****FALL TERM**

		CREDITS
WQT-245	Instrumentation & Control	4

**WINTER TERM**

WQT-125	High Purity Water Production I	3
MTH-082	Math for Water Technology	1

**SPRING TERM**

WQT-135	High Purity Water Production II	4
WQT-180	Water & Environmental Projects I	5

Minimum credits required for certificate 17

## Web Design Specialist

**CERTIFICATE***Pending State Approval*

The Web Design program prepares students for technical positions related to web and graphic design. This multidisciplinary program incorporates classes from Computer Science and Art. Coursework includes a strong emphasis on computer graphics and design, data communications theory, operating systems, and web design with a focus on current industry standards. Co-operative Work Experience (CWE) is supervised on-the-job employment that supplements the academic classroom environment.

Prerequisites for first term classes include completed coursework or placement out of CS-120 Survey of Computing, WR-095 Paragraph to Essay, and MTH-060 Algebra I. 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 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 may include web designer, web production staff, and graphic designer.

For information contact Debra Carino, ext. 5198 or dcarino@clackamas.edu

**WEB DESIGN SPECIALIST CERTIFICATE****FALL TERM**

		CREDITS
CS-121	Computer Applications [C]	3
CS-140	Operating Systems I [C]	4
CS-160	Computer Tech Orientation [C]	2
ART-115	Basic Design: Two Dimensional Design	4
MTH-065	Algebra II	4

**WINTER TERM**

CS-125H	HTML & Web Site Design [C]	3
CS-179	Data Communications [C]	3
CS-240W	Operating Systems II: Windows [C]	3
ART-225	Computer Graphics I [C]	3
WR-121	English Composition	3

**SPRING TERM**

CS-135I	Advanced Internet Applications [C]	3
CS-280	Computer Science/CWE	3
ART-226	Computer Graphics II [C]	3
ART-262	Digital Photography & Photo-Imaging	3
— —	Human Relations requirement (see page 15; BA-285 or PSY-101 recommended)	3-4

Minimum credits required for certificate: 47-48

## Web Design & Development Specialist

**ASSOCIATE OF APPLIED SCIENCE DEGREE**

*Pending State Approval*

The Web Design & Development Specialist program prepares students for technical positions related to web programming and design. This multidisciplinary program incorporates classes from Computer Science, Art, English, and Business. Coursework 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 on-the-job employment that supplements the academic classroom environment.

Prerequisites for first term classes include completed coursework or placement out of CS-120 Survey of Computing, WR-095 Paragraph to Essay, and MTH-060 Algebra I. 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 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, ext. 5198 or dcarino@clackamas.edu

**WEB DESIGN & DEVELOPMENT SPECIALIST ASSOCIATE DEGREE: 1ST YEAR**

**FALL TERM CREDITS**

CS-121	Computer Applications [C]	3
CS-140	Operating Systems I [C]	4
CS-160	Computer Tech Orientation [C]	2
ART-225	Computer Graphics I [C]	3
MTH-065	Algebra II	4

**WINTER TERM**

CS-125H	HTML & Web Site Design [C]	3
CS-179	Data Communications [C]	3
CS-240W	Operating Systems II: Windows [C]	3
WR-121	English Composition	3
ART-226	Computer Graphics II [C]	3

**SPRING TERM**

CS-280	Computer Science/CWE	3
CS-135I	Advanced Internet Applications [C]	3
ART-227	Computer Graphics III [C]	3
ART-262	Digital Photography & Imaging	3
— —	Human Relations requirement (see page 15; BA-285 or PSY-101 recommended)	3-4

**WEB DESIGN & DEVELOPMENT SPECIALIST ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR**

**FALL TERM CREDITS**

CS-135DB	Advanced Database [C]	3
CS-133S	Web Application Development I [C]	3
CS-140U	Operating Systems I (Linux/UNIX) [C]	3
BA-103	Business Strategies for Computer Consultants	3
WR-122	English Composition	3

**WINTER TERM**

CS-195	Multimedia for the Web [C]	3
CS-233S	Web Application Development II [C]	3
CS-275	Database Design [C]	3
CS-289I	Web Server Administration [C]	2
PE-185	Physical Education	1
WR-227	Technical Writing [C]	3

**SPRING TERM**

CS-234S	Web Application Development III [C]	3
CS-280	Computer Science/Cooperative Work Experience	6
CS-289A	Web Server Administration: Apache Web Server [C]	2
CS-295	Website Technologies [C]	3
ART-221	Flash Animation: Design & Techniques	3

Minimum credits required for degree (requirements & electives) 93-94

## Welding Technology

### CERTIFICATE ASSOCIATE OF APPLIED SCIENCE DEGREE PROFESSIONAL UPGRADE

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 AWS Certified (American Welding Society) professionals and utilize AWS curriculum, the international standard.

Course work focuses on the knowledge and skills to perform:

- Fillet welds and groove welds using:
  - Shielded metal arc welding (SMAW)
  - Gas metal arc (GMAW)
  - Flux cored arc welding (FCAW)
  - Gas tungsten arc (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 may 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 workforce, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information. A short term training certificate is available.

For information contact Mike Mattson, ext. 2483 or mattsonm@clackamas.edu; Sue Caldera, ext. 2013 or suec@clackamas.edu; or the Manufacturing Department, ext. 2062.

#### WELDING TECHNOLOGY CERTIFICATE

FIRST TERM		CREDITS
MFG-107	Industrial Safety and OSHA	3
MTH-050*	Technical Mathematics I	3
WLD-111	Shielded Metal Arc Welding (STICK)	8
WLD-261	Welding Special Projects	2

SECOND TERM		CREDITS
MFG-109	Computer Literacy for Technicians [C]	3
WLD-100	Welder's Print Reading I	3
WLD-113	Gas Metal Arc Welding & Flux Core Arc Welding (GMAW/FCAW)	8
WLD-261	Welding Special Projects	2
WR-101*	Communication Skills: Occupational Writing	3

THIRD TERM		CREDITS
MFG-221	Materials Science	3
WLD-115	Gas Tungsten Arc Welding (GTAW)	8
WLD-200	Welder's Print Reading II	3
WLD-280	Welding Technology/CWE	2
— —*	Human Relations requirement (see page 15)	3
<i>Minimum credits required for certificate</i>		<b>54</b>

#### WELDING TECHNOLOGY ASSOCIATE DEGREE: 1ST YEAR

Complete certificate program.

#### WELDING TECHNOLOGY ASSOCIATE DEGREE: 2ND YEAR

FOURTH TERM		CREDITS
MFG-111	Machine Tool Fundamentals I	3
WLD-211	Advanced SMAW Welding	4
WLD-250	Welding Fabrication I Beginning Project	4
— —*	General elective (any college level course)	3

FIFTH TERM		CREDITS
WLD-213	Advanced GMAW/FCAW Welding	4
WLD-251	Welding Fabrication II Intermediate Project	4
— —*	General elective (any college level course)	3
— —*	PE/Health requirement (see page 15)	3

SIXTH TERM		CREDITS
WLD-215	Advanced GTAW Welding	4
WLD-252	Welding Fabrication III Advanced Project	4
WLD-261	Welding Special Projects	2
WLD-280	Welding Technology/CWE	2

*Minimum credits required for degree (requirements & electives)* **94**

\*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 the Advising & Counseling Center for the transfer requirements of the specific advanced program or school.



*Smart Now...Smart Then.*

*Transfer Information*

## *Transferring? Take Your First Two Years at Clackamas*

Any of the options described below can work well if you want to begin your bachelor's degree at Clackamas Community College. Students using any of these options must still complete lower division coursework required for their major and meet the transfer admission requirements for the four-year university where they plan to transfer.

### *Associate of Arts Oregon Transfer Degree (AAOT)*

This degree is designed for students who want to transfer to an Oregon University System (OUS) school, but may or may not have a chosen major. All OUS schools and many of Oregon's private universities and colleges accept the AAOT to meet their lower division (100 and 200 level) general education requirements.

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

This degree is designed for students who wish to transfer to an OUS school and complete a bachelor's degree in business. Students must complete OUS school specific courses in business while completing the ASOT. Students should work closely with academic advisors at both CCC and the OUS school of their choice to insure they meet any additional requirements and procedures for admission to both the OUS school and the chosen business degree program.

### *Associate of General Studies (AGS)*

This flexible degree uses a broader variety of coursework to meet degree requirements than do any of the other associate-level degrees designed for transfer. Not all courses that may apply to completion of the AGS are transferable to four year institutions. It is important to work closely with an academic advisor to individualize and choose courses to maximize transferability.

### *Transfer Course Work*

This option is for students who have selected a transfer school and want to meet some of the course requirements for that school with CCC courses. Students need to know the degree requirements at their intended transfer school and work with a CCC advisor in order to choose courses.

### *The Oregon Transfer Module (OTM)*

The OTM represents the first year of a bachelor's degree, or 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. Students interested in the OTM should meet with an academic advisor in the Advising & Counseling Center, see pages 10-11).

### *Transfer Steps*

See a faculty advisor or an academic advisor in the Advising & Counseling Center for support in following these steps:

- Contact the four-year university you plan to attend to check entrance requirements and the suggested freshman and sophomore classes required in your chosen field.
- Work with a faculty advisor or an academic advisor for an initial written Educational Plan and before you register for classes each term.
- Check with the college or university a term or two before completing your work at CCC to make sure you are meeting all their requirements.
- Apply for admission to the college or university by their transfer student deadline.
- Have your credits transferred to the four-year institution after you complete your studies at CCC.

*Student Guide 2006-2007*  
**Oregon Transfer Module (OTM)**



	Requirements	Courses
<b>Foundational Skills</b>	<i>Writing (2 courses)</i>	WR-121, 122, 123 or 227
	<i>Oral Communication (1 course)</i>	SP-111 or 112
	<i>Mathematics (1 course)</i>	MTH-105, 111 or higher
<b>Introduction to Disciplines</b>	<i>Arts &amp; Letters (3 courses)</i>	<p><b>Select courses with a prefix of:</b>            ASL, FR, GER, JPN, RUS, SPN (languages must be 200 level)            ART, ENG, HUM (except HUM-100) J, MUP, MUS, PHL, R, TA, SP (courses numbered SP-126 and above)            WR (except WR-101, 121, 122, 123 or 227)</p>
	<i>Social Science (3 courses)</i>	<p><b>Select courses with a prefix of:</b>            ANT, EC, GEO, HST, PS, PSY, SOC, SSC, WS</p>
	<i>Science/Math/Computer Science (3 courses)</i>	<p><b>A. Select at least one lab courses from the biological or physical sciences with a prefix of:</b>            ASC, BI* (except BI-055, BI-163), BOT, CH (except CH-150), ESR, G (except G-119, G-124), GS (except GS-160), PH, Z            *Concurrent enrollment required for BI-160/BI-160L or BI-165C/BI-165CL</p> <p><b>B. Select remaining courses with a prefix of:</b>            ASC, BI, BOT, CH, CS, ESR, G, GS, MTH, PH, Z</p>
	<i>Elective Courses</i> Combined with above must equal at least 45 credits.	<b>Courses must be from the Introduction to Disciplines areas (Arts &amp; Letters, Social Science, or Science/Math/Computer Science)</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.
6. Courses numbered 199, 280, and 299 can only be used in the electives area.

*Student Planner Worksheet 2006-2007*  
**Oregon Transfer Module (OTM)**



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

Requirements	Courses Required	CCC Courses Completed	Transferred Courses	Credits Earned	Courses Needed
<i>Writing</i> WR-121, 122, 123 or 227	2				
<i>Oral Communications/Rhetoric</i> SP-111 or 112	1				
<i>Mathematics</i> MTH-105, 111 or higher	1				
<i>Arts &amp; Letters</i>	3				
<i>Social Science</i>	3				
<i>Science/Math/Computer Science</i> Select three courses including at least one lab course in the biological or physical sciences.	3				
<i>Elective Courses</i> Courses must be from the Introduction to Disciplines areas (Arts & Letters, Social Science, or Science/Math/Computer Science)	<i>will vary</i>				
	<b>TOTALS</b>				

(Total minimum of 45 credits required.)

*Additional Requirements*

- Complete a minimum of 45 credits
- Completion of at least 3 credits at CCC
- Establish cumulative GPA of 2.0 or above at the time the module is posted

Requests for official evaluation of transcripts, course equivalencies and completion of module requirements are to be submitted to the Registrar's Office.

**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. Courses numbered 199, 280, and 299 can only be used in the electives areas. 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.**

## *Transfer Planning Chart*

The following pages contain a comprehensive chart that lists CCC transfer options for the Oregon University System (OUS) bachelor degrees. Degrees offered in the OUS system are listed by Subject Areas, which will help you see related degree possibilities. The chart also shows Oregon Department of Education Career Learning Areas. These indicate the career pathways the degrees are designed to support. CCC advisor information and links to department homepages are located on the chart.

For transfer information regarding bachelor's degrees offered at private and out of state colleges that are not part of the Oregon University System, please contact the schools directly. For more information about bachelor's degrees offered at Oregon University System schools, start with the OUS Academic Program Database website at <http://www.ous.edu/aca/acadprog.html>. See an academic advisor for contact information and additional support.

Degree planning sheets for the AAOT, ASOT in Business, and the AGS can be found on pages 16-20 of this catalog. Please contact your faculty advisor or an academic advisor in the Advising & Counseling Center for course recommendations to support your transfer planning.

### CCC Transfer Options

OUS <sup>1</sup> Subject Areas	OUS <sup>1</sup> Bachelor Degrees <sup>2</sup>	CCC Transfer Options Degrees (D) or Classes (C) <sup>3</sup>	CCC Faculty Advisor/ Advisor <sup>4</sup>	Link to Department Homepage	ODE <sup>5</sup> Career Learning Areas
Architecture	Interior Architecture/Design	D, C	Mike Jones, x2443 mikej@clackamas.edu or Advising & Counseling, x2213	Drafting Department <a href="http://depts.clackamas.edu/drafting/">http://depts.clackamas.edu/drafting/</a>	Industrial & Engineering Systems
	Interior Design	D, C	Advising & Counseling, x2213	Advising & Counseling Department <a href="http://depts.clackamas.edu/advising/">http://depts.clackamas.edu/advising/</a>	
Art	Applied Visual Arts	D, C	Nora Brodnicki, x2347 norab@clackamas.edu or Advising & Counseling, x2213	Art Department <a href="http://depts.clackamas.edu/art/">http://depts.clackamas.edu/art/</a>	Arts & Communication
	Art History & Criticism	D, C			
	Fibers	D, C			
	Fine Arts & Arts Studies	D, C			
	Painting	D, C			
	Media Arts	D, C			
	Metalsmithing & Jewelry	D, C			
	Photography	D, C			
	Printmaking	D, C			
	Sculpture	D, C			
	Dance	D, C	Jim Jackson, x2295 jimj@clackamas.edu or Advising & Counseling, x2213	Athletics Department <a href="http://depts.clackamas.edu/athletics/">http://depts.clackamas.edu/athletics/</a>	
	Theater/Drama	D, C	David Smith-English davidse@clackamas.edu or Advising & Counseling, x2213	<a href="http://depts.clackamas.edu/theatre/">http://depts.clackamas.edu/theatre/</a>	
Arts & Letters	Comparative Literature/ Language	D, C	Trista Cornelius, x2686 tristac@clackamas.edu or Advising & Counseling, x2213	English Department <a href="http://depts.clackamas.edu/english/">http://depts.clackamas.edu/english/</a>	Arts & Communication
	English	D, C			
	English Language & Literature	D, C			
	Language & Culture	D, C			
	Liberal Studies	D, C			
	Linguistics	D, C			

1 Oregon University System: [www.ous.edu](http://www.ous.edu)

2 Many of these degrees at private colleges and universities will also be supported by transfer work at CCC.

3 CCC may not offer degrees or classes specific to every Bachelor Degree subject, but will provide foundation and general education coursework.

4 To reach any college office, call 503-657-6958 and enter the extension.

5 Oregon Department of Education Career Learning Areas: [www.ode.state.or.us](http://www.ode.state.or.us)

## CCC Transfer Options

OUS <sup>1</sup> Subject Areas	OUS <sup>1</sup> Bachelor Degrees <sup>2</sup>	CCC Transfer Options Degrees (D) or Classes (C) <sup>3</sup>	CCC Faculty Advisor/ Advisor <sup>4</sup>	Link to Department Homepage	ODE <sup>5</sup> Career Learning Areas
Arts & Letters	American Studies	D, C	Don Hartsock, x2542 donnh@clackamas.edu or Advising & Counseling, x2213	Social Sciences Department <a href="http://depts.clackamas.edu/socsci/">http://depts.clackamas.edu/socsci/</a>	Arts & Communication
	Classical Civilization	D, C			
	Classics	D, C			
	Humanities	D, C			
	Philosophy	D, C			
	Religious Studies & Theology	D, C			
	Speech & Communications	D, C	Kelly Brennan, x2726 kellyb@clackamas.edu or Advising & Counseling, x2213	Communication & Theatre Arts Dept. <a href="http://depts.clackamas.edu/theatre/">http://depts.clackamas.edu/theatre/</a>	
Business, General	Accounting	D, C	Joan Ryan, x2362 joanr@clackamas.edu or Advising & Counseling, x2213	Business Department <a href="http://depts.clackamas.edu/business/">http://depts.clackamas.edu/business/</a>	Business & Management
	Business Administration	D, C			
	Business Administration/ Management	D, C			
	Business/Economics	D, C			
	Business, General	D, C			
	Finance	D, C			
	Management	D, C			
	Merchandising Management	D, C			
	Health Care Administration	D, C	Advising & Counseling, x2213	Education & Human Services Department <a href="http://depts.clackamas.edu/fhs">http://depts.clackamas.edu/fhs</a>	Health Services
Communication	Communication	D, C	Kelly Brennan, x2726 kellyb@clackamas.edu or Advising & Counseling, x2213	Communication & Theatre Arts Dept. <a href="http://depts.clackamas.edu/theatre/">http://depts.clackamas.edu/theatre/</a>	Arts & Communication
	Communication Disorders & Sciences	D, C			
	Communication Studies	D, C			
Computer Science	Computer & Information Science	C	Debra Carino, x5198 dcarino@clackamas.edu or Advising & Counseling, x2213	Computer Science Department <a href="http://cs.clackamas.edu/cs/index.htm">http://cs.clackamas.edu/cs/index.htm</a>	Arts & Communication
	Computer Science	D,C			
	Computer Science/ Multimedia	C			
	Information Systems	C			
	Information Technology	C			
	Management Information Systems	C			
	Operations Management	C			
Criminal Justice	Administration of Justice	D, C	Dick Ashbaugh, x2237 dicka@clackamas.edu or Advising & Counseling, x2213	Criminal Justice Department <a href="http://depts.clackamas.edu/crimjust/">http://depts.clackamas.edu/crimjust/</a>	Human Resources
	Community Crime Prevention	D, C			
	Corrections	D, C			
	Criminal Justice	D, C			
	Law Enforcement	D, C			
Design	Apparel Design	D, C	Nora Brodnicki, x2347 norab@clackamas.edu or Advising & Counseling, x2213	Art Department <a href="http://depts.clackamas.edu/art/">http://depts.clackamas.edu/art/</a>	Arts & Communication
	Multimedia Design	D, C			
	Visual Design	D, C			
Education	Education	D, C	Paula Hamm, x2804 paulah@clackamas.edu or Advising & Counseling, x2213	Education & Human Services Department <a href="http://depts.clackamas.edu/fhs/">http://depts.clackamas.edu/fhs/</a>	Human Services

1 Oregon University System: [www.ous.edu](http://www.ous.edu)

2 Many of these degrees at private colleges and universities will also be supported by transfer work at CCC.

3 CCC may not offer degrees or classes specific to every Bachelor Degree subject, but will provide foundation and general education coursework.

4 To reach any college office, call 503-657-6958 and enter the extension.

5 Oregon Department of Education Career Learning Areas: [www.ode.state.or.us](http://www.ode.state.or.us)

## CCC Transfer Options

OUS <sup>1</sup> Subject Areas	OUS <sup>1</sup> Bachelor Degrees <sup>2</sup>	CCC Transfer Options Degrees (D) or Classes (C) <sup>3</sup>	CCC Faculty Advisor/ Advisor <sup>4</sup>	Link to Department Homepage	ODE <sup>5</sup> Career Learning Areas
Engineering	Bioengineering	C	John Lewis, x2206 jlewis@clackamas.edu or Advising & Counseling, x2213		Industrial & Engineering Systems
	Chemical Engineering	C			
	Civil Engineering				
	Construction Engineering Management	C			
	Electrical Engineering	C			
	Electrical & Electronics Engineering	C			
	Engineering Physics	C			
	Environmental Engineering	C			
	Forest Engineering	C			
	Geological Engineering	C			
	Industrial Engineering	C			
	Mechanical Engineering	C			
	Metallurgical Engineering	C			
	Mining Engineering	C			
	Nuclear Engineering	C			
	Renewable Energy Systems	C			
Computer Engineering	C	Debra Carino, x5198 dcarino@clackamas.edu or Advising & Counseling, x2213	Computer Science Department <a href="http://cs.clackamas.edu/cs/index.htm">http://cs.clackamas.edu/cs/index.htm</a>		
Software Engineering Technology	C	Mike Mattson, x2483 mattsonm@clackamas.edu or Advising & Counseling, x2213	Manufacturing Technology Department <a href="http://depts.clackamas.edu/mfg/">http://depts.clackamas.edu/mfg/</a>		
Electronics Engineering Technology	C				
Manufacturing Engineering Technology	C				
Mechanical Engineering Technology	C	Mike Jones, x2443 mikej@clackamas.edu or Advising & Counseling, x2213	Drafting Department <a href="http://depts.clackamas.edu/drafting/">http://depts.clackamas.edu/drafting/</a>		
Geomatics	D, C				
Environmental Studies	Environmental Health & Safety	D, C	Bob Miskey, x2376 bobm@clackamas.edu or Advising & Counseling, x2213	Science Department (Life Sciences) <a href="http://depts.clackamas.edu/science-bi/">http://depts.clackamas.edu/science-bi/</a>	Natural Resource Systems
	Environmental Economics, Policy & Management	D, C			
	Environmental Studies & Natural Resources	D, C			
Ethnic Studies	Asian Studies	D, C	Don Hartsock, x2542 donh@clackamas.edu or Advising & Counseling, x2213	<a href="http://depts.clackamas.edu/socsci/">http://depts.clackamas.edu/socsci/</a>  Advising & Counseling Department <a href="http://depts.clackamas.edu/advising/">http://depts.clackamas.edu/advising/</a>	Arts & Communication
	Black Studies	D, C			
	Ethnic Studies	D, C			
	Judaic Studies				
Russian & East European Studies	D, C				
Family & Human Services	Child & Family Studies	D, C	Patricia McIveen, x2240 patriciam@clackamas.edu or Advising & Counseling, x2213	Education & Human Services Department <a href="http://depts.clackamas.edu/fhs/">http://depts.clackamas.edu/fhs/</a>	Human Resources
	Early Childhood Development	D, C			
	Family & Human Services	D, C			
	Human Development & Family Services	D, C			

1 Oregon University System: [www.ous.edu](http://www.ous.edu)

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## CCC Transfer Options

OUS <sup>1</sup> Subject Areas	OUS <sup>1</sup> Bachelor Degrees <sup>2</sup>	CCC Transfer Options Degrees (D) or Classes (C) <sup>3</sup>	CCC Faculty Advisor/ Advisor <sup>4</sup>	Link to Department Homepage	ODE <sup>5</sup> Career Learning Areas
Foreign Languages	American Sign Language/ English Interpreting	D, C	Irma Bjerre, x2381 irmab@clackamas.edu or Advising & Counseling, x2213	Foreign Language Department <a href="http://depts.clackamas.edu/forlang/">http://depts.clackamas.edu/forlang/</a>	Arts & Communication
	Chinese	D, C			
	Foreign Languages	D, C			
	French	D, C			
	German	D, C			
	Greek	D, C			
	Latin	D, C			
	Italian	D, C			
	Japanese	D, C			
	Romance Languages	D, C			
Spanish	D, C				
Health & Physical Education	Exercise & Sport Science	D, C	Jim Jackson, x2295 jimj@clackamas.edu or Advising & Counseling, x2213	Athletics Department <a href="http://depts.clackamas.edu/athletics/">http://depts.clackamas.edu/athletics/</a>	Human Services
	Health Education	D, C			
	Health Promotion & Education	D, C			
	Outdoor Recreation Leadership & Tourism	D, C			
	Food Science & Technology	D, C	Fran Page, x5071 franp@clackamas.edu Advising & Counseling, x2213	Education & Human Services Department <a href="http://depts.clackamas.edu/fhs/">http://depts.clackamas.edu/fhs/</a>	Natural Resource Systems Health Services
Nutrition & Food Mgmt.	D, C				
Journalism	Communication Studies	D, C	Linda Vogt, x2310 lindav@clackamas.edu or Advising & Counseling, x2213	English Department <a href="http://depts.clackamas.edu/english/">http://depts.clackamas.edu/english/</a>	Arts & Communication
	Electronic Media	D, C			
	Magazine	D, C			
	News-Editorial	D, C			
	Advertising	D, C	Dale Hatfield, x2361 daleh@clackamas.edu or Advising & Counseling, x2213	Business Department <a href="http://depts.clackamas.edu/business/">http://depts.clackamas.edu/business/</a>	Business & Management
Public Relations	D, C				
Mathematics	Mathematics	D, C	Kurt Lewandowski, x2431 kurtl@clackamas.edu or Advising & Counseling, x2213	Mathematics Department <a href="http://math.clackamas.cc.or.us/math/">http://math.clackamas.cc.or.us/math/</a>	Industrial & Engineering Systems
Medical	Clinical Laboratory Science (Medical Technology)	D, C	Advising & Counseling, x2213	Advising & Counseling Department <a href="http://depts.clackamas.edu/advising/">http://depts.clackamas.edu/advising/</a>	Health Services
	Dental Hygiene	D, C			
	Echocardiography	D, C			
	Emergency Medical Services	D, C			
	Human Physiology	D, C			
	Nursing	D, C			
	Pre-Dental	D, C			
	Pre-Medical	D, C			
	Pre-Optometry	D, C			
	Pre-Pharmacy	D, C			
	Pre-Physical Therapy	D, C			
	Radiologic Science	D, C			
	Respiratory Care	D, C			
Ultrasound	D, C				

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Medical	Animal Sciences	D, C	Bob Misley, x2376 bobm@clackamas.edu or Advising & Counseling, x2213	Science Department (Life Sciences) <a href="http://depts.clackamas.edu/science-bi/">http://depts.clackamas.edu/science-bi/</a>	Natural Resource Systems
Music	Contemporary Music	D, C	Tom Wakeling, x2160 wakelingt@clackamas.edu or Advising & Counseling, x2213	Music Department <a href="http://depts.clackamas.edu/music/">http://depts.clackamas.edu/music/</a>	Arts & Communication
	Music	D, C			
	Music Education	D, C			
	Music: Jazz Studies	D, C			
	Music: Performance	D, C			
Natural Resources	Music Theory	D, C	Elizabeth Howley, x2389 ehowley@clackamas.edu or Advising & Counseling, x2213	Horticulture Department <a href="http://depts.clackamas.edu/hort/">http://depts.clackamas.edu/hort/</a>	Natural Resource Systems
	Agricultural Business Management	D, C			
	Agricultural, General	D, C			
	Agricultural & Resource Economics	D, C			
	Crop & Soil Science	D, C			
	Forest Management	D, C			
	Horticulture	D, C			
	Rangeland Resources	D, C			
	Fisheries & Wildlife Science	D, C			
Fire Services Administration	D, C	Tom Laugle, x2319 toml@clackamas.edu or Advising & Counseling, x2213	Wildland Firefighting <a href="http://depts.clackamas.edu/esh/wildland/">http://depts.clackamas.edu/esh/wildland/</a>		
Wood Science & Technology	D, C	Advising & Counseling, x2213	Advising & Counseling Department <a href="http://depts.clackamas.edu/advising/">http://depts.clackamas.edu/advising/</a>	Natural Resource Systems	
Natural Resources	D, C				
Forest Recreation Resources	D, C				
Planning, Public Policy & Management	Housing Studies	D, C	Advising & Counseling, x2213	Advising & Counseling Department <a href="http://depts.clackamas.edu/advising/">http://depts.clackamas.edu/advising/</a>	Human Resources
	Planning, Public Policy, & Management	D, C			
	Public Policy & Administration	D, C			
Science	Biochemistry	D, C	Bob Misley, x2376 bobm@clackamas.edu or Advising & Counseling, x2213	Science Department (Life Sciences) <a href="http://depts.clackamas.edu/science-bi/">http://depts.clackamas.edu/science-bi/</a>	Health Service or Natural Resource Systems
	Biochemistry & Biophysics	D, C			
	Biology	D, C			
	Botany	D, C			
	Chemistry	D, C			
	Earth Science	D, C			
	Entomology	D, C			
	Environmental Science	D, C			
	Geology	D, C			
	Marine Biology	D, C			
	Microbiology	D, C			
	Physics	D, C			
	Zoology	D, C			
			Science Department (Physical Sciences) <a href="http://depts.clackamas.edu/science/physci/">http://depts.clackamas.edu/science/physci/</a>	Industrial & Engineering Systems	

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Social Science	Anthropology	D, C	Don Hartsock, x2542 donh@clackamas.edu Advising & Counseling, x2213	Social Sciences Department <a href="http://depts.clackamas.edu/socsci/">http://depts.clackamas.edu/socsci/</a>	Human Resources
	Black Studies	D, C			
	Community Development	D, C			
	Economics	D, C			
	Ethnic Studies	D, C			
	Geography	D, C			
	History	D, C			
	Political Science	D, C			
	Psychology	D, C			
	Sociology	D, C			
	Urban Studies & Planning	D, C			
	Women's & Gender Studies Women's Studies	D, C D, C	Irma Bjerre, x2381 irmab@clackamas.edu or Don Hartsock, x2542 donh@clackamas.edu or Advising & Counseling, x2213	Social Sciences Department <a href="http://depts.clackamas.edu/socsci/">http://depts.clackamas.edu/socsci/</a> or Foreign Language Department <a href="http://depts.clackamas.edu/forlang/">http://depts.clackamas.edu/forlang/</a>	Business & Management
International Studies	D, C				
Varies	Multi-disciplinary Studies	D, C	Advising & Counseling, x2213	Advising & Counseling Department <a href="http://depts.clackamas.edu/advising/">http://depts.clackamas.edu/advising/</a> or academic departments of interest	Varies
	Interdisciplinary Studies	D, C			

There are many OUS certificates and minors in areas of study in addition to the degrees listed. Examples of undergraduate certificates at OUS schools are Peace Studies, Latin American Affairs, Applied Ethics, 20th Century Studies, Biotechnology, Dietetics, Film Studies, Cultural Resource Management, and Dispute Resolution. Check with the universities of interest, CCC Department homepages, your CCC Faculty Advisor, the OUS Academic Program Database website at <http://www.ous.edu/aca/acadprog.html>, or the CCC Advising & Counseling Center for more options and information.



*Smart Now...Smart Then.*

*Course Descriptions*

## *Course Descriptions*

AB*	Collision Repair .....	77	GER	German .....	117
ABR*	Collision Repair/Refinishing .....	77	GIS	Geographic Information Systems .....	118
AM	Automotive Service Technology .....	78	GS	General Science .....	119
ANT	Anthropology .....	79	HD*	Human Development & Career Planning .....	119
ART	Art .....	80	HDF*	Family Studies .....	120
ASC	Arts and Sciences .....	82	HE/HPE	Health .....	121
ASE**	Adult High School Diploma .....	82	HOR*	Horticulture .....	122
ASL	American Sign Language .....	85	HPD*	Healthcare Professional Development .....	124
BA	Business Administration .....	86	HS*	Human Services/ Gerontology .....	125
BC*	Building Construction Technology .....	88	HST*	History .....	125
BI	Biology .....	89	HUM	Humanities .....	126
BOT	Botany .....	90	J	Journalism .....	128
BT*	Business Technology .....	90	MA*	Medical Assistant .....	128
CAD*	Computer-Aided Drafting .....	92	MFG*	Manufacturing Technology .....	129
CDT*	Drafting .....	93	MTH	Mathematics .....	131
CH	Chemistry .....	95	MUP	Music Performance .....	132
CIV**	Citizenship .....	96	MUS	Music .....	135
CJA	Criminal Justice .....	96	NUR*	Nursing .....	139
CLA*	Clinical Laboratory Assistant .....	98	OS**	Study Skills .....	140
CPL	Credit for Prior Learning .....	99	OST*	Occupational Skills Training .....	140
CS	Computer Science .....	99	PE	Physical Education .....	140
CW**	Computer Science Workshops & Short Courses .....	102	PH	Physics .....	141
CWE	Cooperative Work Experience .....	102	PHC	Pharmacology .....	141
DA*	Dental Assistant .....	103	PHL	Philosophy .....	142
EC	Economics .....	104	PIE**	Program for Intensive English .....	142
ECE*	Early Childhood Education .....	104	PS	Political Science .....	144
ED	Education .....	105	PSY	Psychology .....	144
EE	Electrical Engineering .....	106	R	Religious Studies .....	145
EET*	Electronics Systems Technology .....	106	RD	Reading .....	145
EL	Study Skills .....	107	RE	Real Estate .....	146
EMT*	Emergency Medical Technology .....	107	RUS	Russian .....	146
ENG	English .....	108	SBM**	Small Business Management .....	146
ENL*	English as a Non-Native Language .....	110	SM*	Microelectronics Systems Technology .....	147
ERM*	Energy & Resource Management .....	110	SOC	Sociology .....	147
ESH*	Environmental Safety & Health .....	111	SP	Speech .....	148
ESL**	English as a Second Language .....	111	SPN	Spanish .....	149
ESR*	Environmental Science .....	113	SSC	Social Science Inquiry .....	150
EST*	Employment Skills Training .....	114	TA	Theatre Arts .....	152
FN	Food & Nutrition .....	114	TPH*	Technical Physics .....	153
FR	French .....	114	WLD*	Welding Technology .....	153
FRP*	Fire Science (Wildland) .....	114	WQT*	Water & Environmental Technology .....	155
G	Geology .....	116	WR	Writing .....	156
GE	General Engineering .....	116	WS	Women's Studies .....	157
GED**	General Ed. Development/Adult Basic Ed. ....	117	Z	Zoology .....	157
GEO	Geography .....	117			

\* Courses with this prefix may not transfer with credit to a four-year institution.

\*\* Courses with this prefix will not transfer with credit to a four-year institution.

**AB**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional 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.

**AB-111 Collision Repair/Chassis & Brakes**

5 credits, Winter  
Collision damage repair. Covers diagnosis, repair and replacement of brake, suspension and steering components.

**AB-112 Collision Repair Welding I**

1-2 credits, Fall/Winter/Spring  
Focuses on auto collision damage repair. Emphasis is on MIG, GMAW (Gas Metal Arc Welding) welding on light gauge metals, oxygen-acetylene welding cutting and forming.

**AB-113 Collision Repair I/Nonstructural**

1-12 credits, Fall/Winter/Spring  
Metal finishing with instruction in dent repair and plastic body filler. Includes shop safety, service of doors, door components, glass, bumpers, hoods, deck lids, and wind/water leaks.

**AB-123 Collision Repair Welding II**

2 credits, Fall/Winter/Spring  
Training in light gauge metal repair: GMAW (Gas Metal Arc Welding), PAC (Plasma Arc Cutting), S-TRSW (Squeeze-Type Resistance Spot Welding), and other advanced welding techniques specific to collision damage repair. Prerequisite: AB-112.

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

1-12 credits  
Fall/Winter/Spring/Summer  
Major body damage repairs using modern and conventional frame repair equipment. Replacement of fixed glass, welded body panels and parts. Includes introduction to uni-body repair and estimating. Prerequisite: AB-123.

**AB-149 Collision Repair Estimating I**

2 credits, Fall  
This course provides instruction in procedure and terminology used in the collision repair estimating field. Body part component identification and the effects of a collision on a vehicle will be studied.

**AB-150 Collision Repair Estimating II**

2 credits, Winter/Spring  
Provides detailed instruction in the use of modern computerized estimating systems in the collision repair field. Prerequisite: AB-149.

**AB-211 Collision Repair/Electrical I**

4 credits, Spring  
Develops entry level skills in testing, diagnosing and repairing chassis-wiring systems relating to automotive collision damage.

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

1-12 credits  
Fall/Winter/Spring/Summer  
Major auto body repair: Dents, bolt-on parts replacement, replacement of welded body panels and parts, unibody and conventional frame repair, and flexible bumper repair. Prerequisites: AB-133 & AB-211.

**AB-224 Advanced Collision Repair IV**

1-12 credits  
Fall/Winter/Spring/Summer  
Advanced frame repair and advanced unibody repair. Advanced electronic frame measuring and aluminum welding. Required: Instructor consent. Prerequisite: AB-222.

**AB-231 Collision Repair/Electrical II**

3 credits, Spring  
Advanced electrical diagnosis and repair, including passive and non-passive restraint systems, i.e., seat belt restraints, air bags and impact sensor units. Prerequisite: AB-211.

**AB-235 Collision Repair Welding III**

2 credits, Winter/Spring  
Aluminum welding for collision damage repair. GMAW (Gas Metal Arc Welding) and GTAW (Gas Tungsten Arc Welding) 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. On-the-job experience in an auto body repair shop. Required: Instructor consent & a CWE seminar.

**ABR**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

## *Collision Repair/Refinishing*

**ABR-125 Collision Repair Refinishing I**

1-12 credits, Fall/Winter/Spring  
Includes shop safety, fire prevention, selection and use of paint products, abrasives, fillers, basic application of top coats, primers and sealers.

**ABR-127 Collision Repair/Refinishing II**

1-12 credits  
Fall/Winter/Spring/Summer  
Application of urethane top coats includes complete refinishing, spot painting, color matching, and problem solving. Introduction to computer color information retrieval and mixing. Prerequisite: ABR-125.

**ABR-129 Collision Repair/Refinishing III**

1-12 credits  
Fall/Winter/Spring/Summer  
Application of urethane enamel, urethane base coat/clear coat, and tri-coat/pearl finishes. Includes complete refinishing, spot and panel painting, color matching and problem solving. Prerequisite: ABR-127.

**ABR-142 Airbrush Art**

2 credits, Fall/Winter  
Includes original 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, decals, 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 Auto Body Refinishing/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. On-the-job experience in an auto refinishing shop. Required: Instructor consent & a CWE seminar.

**ABR-225 Production Shop Techniques**  
1-10 credits

Fall/Winter/Spring/Summer

Designed for students who wish to gain additional hands-on experience in refinishing, using the most up-to-date methods and materials. Required: Instructor consent. Prerequisites: ABR-125, ABR-127, ABR-129.

**ABR-227 Restoration Practices**  
1-10 credits

Fall/Winter/Spring/Summer

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. Prerequisites: ABR-125, ABR-127, ABR-129, ABR-225. Required: Instructor consent.

**AM**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional 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.

**AM-120 New Student College Success**  
1 credit, not offered every term

Workshop style course designed to introduce students to each other and the skills they will need to achieve college success. Recommended for all new students in the automotive field. No tuition charge for class.

**AM-121 General Auto Repair I**  
3 credits, Fall/Winter/Spring

For current or previously enrolled auto students. 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.

**AM-122 General Auto Repair II**  
3 credits, Fall/Winter/Spring

For current or previously enrolled auto students. 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.

**AM-123 General Auto Repair III**  
3 credits, Fall/Winter/Spring

For current or previously enrolled auto students. 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.

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

Includes basic electricity, introduction to semiconductors, electrical measurement, schematics, wiring repair, service of batteries, cranking, charging, and ignition systems.

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

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.

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

Includes design, construction, and service of front and rear suspension systems. Also covers wheels and tires, steering, and wheel alignment.

**AM-133 Engine Systems**  
7 credits, Fall/Summer

A course in engine repair. Includes engine electrical fundamentals, design, construction, testing, maintenance, repair, and rebuilding.

**AM-141 ASE Test Preparation**  
3 credits, not offered every term

Prepares automotive technicians for the National Institute for Automotive Service Excellence tests as a Certified Master Automotive Technician.

**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, Winter

Covers design, construction, testing, maintenance, and repair of automotive heating and air conditioning systems.

**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. Evenings only.

**AM-235 Power Transmission Systems**  
7 credits, Fall

Covers construction, operation, service and repair of clutches, manual transmissions, U-joints, drive lines, final drives, overdrive, and four wheel drives.

**AM-243 Fuel & Emission Control Systems**  
7 credits, Winter

Covers service of fuel storage and delivery systems: fuel injection, emission controls, and other electronic engine controls. Includes DSO use and exhaust gas analysis. Prerequisite or Corequisite: AM-129.

**AM-244 Advanced Electrical & Fuel Systems**  
7 credits, not offered every term

Continuation of AM-129 & AM-243. Includes in-depth study of systems that affect engine performance and computerized diagnostic equipment. Covers diagnosis/repair of accessory systems, supplemental restraint systems and advanced diagnosis of electrical/electronic systems. Prerequisites: AM-129 & AM-243, or instructor consent.

**AM-245 Automatic Transmission Systems**  
7 credits, Fall

A course in automatic transmission repair. Includes diagnosis and testing, service and rebuilding of automatic transmissions and transaxles. Prerequisite: AM-129. Recommended: AM-133.

**AM-250 High Performance Engines I**  
3 credits, not offered every term

First in series designed to develop a solid foundation in the history and operation of internal combustion engines. Includes performance requirements for engines designed to operate in specific environments - street, high performance and racing.

**AM-251 High Performance Engines II**  
3 credits, not offered every term

Second in the series that will introduce the building and performance requirements for engines designed to operate in specific environments - street, high performance and racing. Prerequisite: AM-250.

**AM-258 Advanced Brake & Chassis Systems**  
4 credits, not offered every term

A continuation of AM-130 & AM-131. Includes in-depth study of alignment, ABS, suspension problems, and special tools and equipment used in brake and suspension service. Prerequisites: AM-130 & AM-131.

**AM-280 Auto Mechanics/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. On-the-job experience in an auto repair shop or auto dealership. Required: Instructor consent & a CWE seminar.

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**ANT****Anthropology****ANT-101 Physical Anthropology**  
4 credits, Fall

Introduces the study of humans as biological beings in the context of modern genetics, evolutionary theory, primate behavior, fossil hominines, and the role of the physical anthropologist in forensic science. Recommended: Placement in RD-115.

**ANT-102 Archaeology & Prehistory**  
4 credits, Winter/Spring

Introduces the methods used by archaeologists to study the development of human cultures. Provides a survey of world prehistory, tracing the transition of human societies from hunting and gathering to farming, to the beginning of urban life and the rise of early civilizations. Also offered as a telecourse. Recommended: Placement in RD-115.

**ANT-103 Cultural Anthropology**  
4 credits, Fall/Winter/Spring

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. Note: Certain sections of ANT-103 are offered as a telecourse. Recommended: Placement in RD-115.

**ANT-230 Indians of Oregon**  
4 credits, not offered every year

Survey of Native American cultures of Oregon based on archaeological, ethno-historical, and ethnographic evidence. Begins with arrival of humans in this region more than 12,000 years ago and concludes with contemporary Native American issues. Recommended: Placement in RD-115.

**ANT-231 Indians of the Pacific N.W.**  
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 archaeological, ethno-historical, and ethnographic evidence. Includes contemporary issues in Northwest Native American life. Recommended: 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: 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-101 Art Appreciation**  
3 credits, Fall

Discover the fundamentals of thinking about and creating art through class discussions, gallery/museum tours. This course will examine history, culture, ideas and issues associated with American Art from 1600-1945.

**ART-102 Art Appreciation**  
3 credits, Winter

Discover the fundamentals of thinking about and creating art through class discussions, gallery/museum tours. This course will examine history, culture, ideas and issues associated with European Art from 1600-1945.

**ART-103 Art Appreciation**  
3 credits, Spring

Discover the fundamentals of thinking about and creating art through class discussions, gallery/museum tours. This course will examine history, culture, ideas and issues associated with Contemporary Art from 1945 - the present day.

**ART-115 Basic Design: Two Dimensional Design**

4 credits, Fall/Winter/Spring

Acquaints students with the vocabulary of composition, builds creative and analytical skills, and examines historical and contemporary issues related to visual composition.

**ART-116 Basic Design: Color Theory & Composition**

4 credits, Winter/Spring

Explores color and its relationship to visual composition, and examines historical and contemporary issues of color and composition in the arts.

**ART-117 Basic Design: Three Dimensional Composition**

4 credits, Fall/Spring

Examines the elements of form and space, the principles of structure, and processes involving form. Historical and contemporary issues relating to sculpture, architecture and design are considered.

**ART-131 Drawing**

4 credits, Fall

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, readings and critique of projects.

**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, readings and critique of projects.

**ART-133 Drawing**

4 credits, Spring

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, readings and critique of projects.

**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. Course requires access to a 35mm camera with adjustable exposure controls.

**ART-162 Photography II**

3 credits, Winter/Spring

Continuation of the exploration of camera operation and darkroom processes in developing and printing film. Elements of composition, content, and historical reference will be explored. Course requires access to a 35mm camera with adjustable exposure controls. Recommended: Pass ART-161 or instructor consent.

**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. Course requires access to a 35mm camera with adjustable exposure controls. Recommended: Pass ART-162 or instructor consent.

**ART-204 History of Western Art**

3 credits, Fall

Art, culture and history from the Paleolithic era through the Byzantine style. A broad overview of art history. Encourages an appreciation and understanding of art and its history through readings, lectures, papers and exams. Recommended: Placement in RD-115 & placement in WR-121 or pass WR-095.

**ART-205 History of Western Art**

3 credits, Winter

Examines art, culture and history from the Medieval Era through the Renaissance. A broad overview of art history. Encourages an appreciation and understanding of art and its history through readings, lectures, papers and exams. Recommended: Placement in RD-115 & placement in WR-121 or pass WR-095.

**ART-206 History of Western Art**

3 credits, Spring

Examines art, culture and history from the Baroque period through the 20<sup>th</sup> century. A broad overview of art history. Encourages an appreciation and understanding of art and its history through readings, lectures, papers and exams. Recommended: Placement in RD-115 & placement in WR-121 or pass WR-095.

**ART-211 Survey of Modern Art**

3 credits, Fall

Historical survey of "modern" art from its origins in the mid-19th century in Europe to World War I. Emphasis is on the major styles, monuments and artists, and their social and political implications.

**ART-212 Survey of Modern Art**

3 credits, Winter

Historical survey of "modern" art from World War I to early 1960s. Emphasis is on the major monuments and artists, their social and political implications, and on the significance of the shift of major art centers from Europe to the United States in the 20th century.

**ART-213 Survey of Modern Art**  
3 credits, Spring

Historical survey of “modern” and “contemporary” art from the early 1960s to present day. Emphasis on major contemporary art in relation to cultural and political issues at the end of the 20th century.

**ART 221 Flash Animation: Design & Techniques**  
3 credits, Spring

Introduces the principles of animation using Macromedia’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-225 Computer Graphics I [C]**  
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 [C]**  
3 credits, Fall/Winter/Spring

Continuation of the processes of digital graphics programs. More advanced aspects of image compositing, bit mapping, layering, and using channels in Photoshop. Creative problem solving, design applications and contemporary issues will be explored. Recommended: Pass ART-225.

**ART-227 Computer Graphics III [C]**  
3 credits, Spring

Use of multi-formats to create images, compositions and documents. Design principles, creative problem solving, historical and contemporary issues in graphics and aesthetics will be considered. Recommended: Pass ART-225 & pass ART-226.

**ART-250 Ceramics/Beginning**  
3 credits, Fall

Broad general background in ceramics. Explore methods of working with clay: coiling, slab construction and throwing on the wheel. Introduction to glazing and firing. Research contemporary and historical ceramics. Develop fundamental skills to foster artistic growth.

**ART-251 Ceramics/Beginning**  
3 credits, Winter

Broad general background in ceramics. Explore methods of working with clay: coiling, slab construction and throwing on the wheel. Introduction to glazing and firing. Research contemporary and historical ceramics. Develop fundamental skills to foster artistic growth.

**ART-252 Ceramics/Beginning**  
3 credits, Spring

Broad general background in ceramics. Explore methods of working with clay: coiling, slab construction and throwing on the wheel. Introduction to glazing and firing. Research contemporary and historical ceramics. Develop fundamental skills to foster artistic growth.

**ART 253 Ceramics/Intermediate**  
3 credits, Fall

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.

**ART 254 Ceramics/Intermediate**  
3 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.

**ART 255 Ceramics/Intermediate**  
3 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.

**ART 257 Jewelry and Metals**  
3 credits, Fall

Basic techniques of silver and non-precious metals, fabrication, forming and surface treatments. Includes sawing, filing, etching, roller printing and chain making. Design and execute jewelry and small sculpture. No experience necessary.

**ART 258 Jewelry and Metals**  
3 credits, Winter

Basic techniques of stonemasonry. Includes round, triangular and square bezels for cabochons, tube setting and commercial and irregular prong setting for faceted stones. Design and execute finished pieces of jewelry. No experience necessary.

**ART 259 Jewelry and Metals**  
3 credits, Spring

Basic techniques of casting in silver and bronze. Includes cuttlefish, centrifugal, sand casting, clay impression, tumbling and patination. Design and execute jewelry, small sculpture and flatware. No experience necessary.

**ART 262 Digital Photography and 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 Elements software. Prerequisite: CS-90 or instructor consent

**ART 277 Welding: Metal Sculpture**  
2 credits, Fall/ Winter/ Spring

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-289 Bronze Casting**

3 credits, not offered every term

Self-directed, advanced level sculpture course for students with a sculpture background. Focus on the lost wax process of metal casting in bronze and aluminum. Students will have opportunities to explore personal expression of form and content.

**ART-290 Advanced Painting**

4 credits, not offered every term

Concentrates on individualized student projects and options. Projects will emphasize traditional elements of composition, color, gesture and value while integrating personal conceptual nature. Project oriented research and critical analysis of completed projects.

**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 introduced. Concepts of aesthetics in formal composition will be explored through projects, lectures, and critiques. Historical reference will be examined.

**ART-293 Sculpture**

4 credits, Spring

Introduces metal fabricating, welding, and metal casting. Focus on mixed media and visual communication. Concepts of aesthetics in formal composition will be explored through projects, lectures, and critiques. Historical reference will be examined.

**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.

**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.

**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.

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**ASC****Arts and Sciences**

See also General Science (GS).

**ASC-200 Natural Science Inquiry**

4 credits, Fall

Introductory lab science course for liberal arts majors. Focuses on scientific discoveries and observations of the Lewis and Clark expedition. Interdisciplinary perspective on science. Collaborative scientific investigations and critical thinking. Topics include scientific methodology, history, and research techniques. Recommended: Placement in WR-121 or pass WR-095.

**ASC-201 Integrated Science Concepts**

4 credits, Winter

Lecture and laboratory activities integrate science concepts recorded in the journals of Lewis and Clark with current science topics in popular culture. Emphasis on critical thinking and collaborative scientific investigation. Topics include biochemistry, genetics, and zoology. Prerequisite: Pass ASC-200 or instructor consent.

**ASC-202 Integrated Science Concepts**

4 credits, Spring

Continued integration of science concepts related to the Lewis and Clark expedition. Provides interdisciplinary perspective on science and engages students in collaborative scientific investigation and critical thinking. Topics include plant identification, evolution, and ecology. Prerequisite: Pass ASC-200 or instructor consent.

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**ASE**

Courses with this prefix will not transfer with credit to a four-year institution.

**Adult High School Diploma****ASE-010 Basic Math**

.5-1.5 high school credits

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. Required: Instructor consent.

**ASE-011 Applied Math I**

.5 high school credits

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 credits  
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**

.5-1.5 high school credits  
Fall/Winter/Spring/Summer

Review of English fundamentals of grammar, spelling, capitalization, and punctuation. Elective credit only. Required: Instructor consent.

**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-021 Effective Study Skills**

.5 high school credit  
Fall/Winter/Spring/Summer

Emphasizes learning skills for college success and targets students with pre-college level skills. Includes time management, listening/ notetaking, study/reading textbooks, concentration, test preparation/anxiety, effective use of college library resources. Required: Instructor consent.

**ASE-022 Developmental English**

.5-1.5 high school credits  
Fall/Winter/Spring/Summer

Remedial review of grammar, spelling, capitalization, and punctuation. Elective credit only. 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**

.5-1.5 high school credits  
Fall/Winter/Spring/Summer

Develops basic reading skills, including phonics, pronunciation, spelling, word attack skills, basic vocabulary, and comprehension skills. Elective credit only. 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**

.5-7 high school credits  
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. 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-045 Individualized Education for Adults**

0 credit, Fall/Winter/Spring/Summer  
Individualized basic skills education for adults prepares students for upgrading basic skills and General Educational Development (GED). Required: Instructor consent.

**ASE-046 Human Development**

.5-2 variable credit class  
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.

**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 Intro: Food Preparation/Nutrition**

.5-2 credit high school credits  
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. 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-055 Individualized Education for Adults**

0 credit, Fall/Winter/Spring/Summer  
Individualized basic skills education for adults prepares students for upgrading basic skills and General Educational Development (GED). 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. Field trip involves river rafting the Clackamas River. 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. A field trip involves snowshoeing on Mt. Hood where students hike, observe animal tracks, dig and analyze snow pits, and construct a quinzhee snow hut. 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-064 Earth/Space Science**  
**.5 high school credit, Summer**

Explores the natural history of the Mt. Jefferson Wilderness in the Oregon Cascades. Students conduct field surveys of native wildlife and plants in various habitats. Prerequisites: ASE-061 (General/Life Science) or ASE-062 (Physical Science/Winter Ecology) or ASE-063 (General Science/Wildlife). Students need to be healthy and able to walk up to eight miles per day at elevations up to 7,000 feet. 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 credits**

**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. Instructor consent required.

**ASE-072 Algebra II**  
**.5 high school credits**

**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. Instructor consent required.

**ASE-086 General Science/Birds**  
**.05 high school credits**

**Fall/Winter/Spring/Summer**

Presents principles of general science such as scientific classification, evolution and natural selection, distinguishing fact from value, the scientific method, and current events and their correlation to historical events in science in the context of bird adaptations, origins, physiology, flight, migration, and current scientific cases. Required: Instructor consent.

**ASE-087 Physical Science: Exploring The Nardoo**

**.05 high school credits**

**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.

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**ASL**

**American Sign Language**

**ASL-101 American Sign Language**  
**4 credits, Fall**

First term of a three-term introductory course. Everyday communication is the centerpiece of each lesson. Topics revolve around sharing information about ourselves and our environment. Grammar is introduced in context, with an emphasis on developing question and answering skills. Strategies are presented to help the student maintain a conversation.

**ASL-102 American Sign Language**  
**4 credits, Winter**

Second term of a three-term introductory course. Emphasis will be on increasing communicative abilities. Course will focus on language functions such as making requests, describing others, and/or telling a short story. Grammar and vocabulary will also be emphasized throughout the course. Prerequisite: Pass ASL-101 or instructor consent.

**ASL-103 American Sign Language**  
**4 credits, Spring**

Third term of a three-term introductory course. Emphasis will be on developing conversational competence. Course includes basic ASL vocabulary and grammar used for basic communication such as opening conversations, clarifying, giving reasons, narrating family history, correcting, and elaborating. Prerequisite: Pass ASL-102 or instructor consent.

**ASL-201 American Sign Language**  
**3 credits, Fall**

Continues work of American Sign Language by reviewing, expanding, and perfecting expressive skill, structure, and vocabulary for the purpose of active communication. Emphasizes active communication in sign language. Prerequisite: ASL-103 or instructor consent.

**ASL-202 American Sign Language**  
**3 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: ASL-201 or instructor consent.

**ASL-203 American Sign Language**  
**3 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: ASL-202 or instructor consent.

**ASL-211 Conversational American Sign Language**

**3 credits, not offered every term**

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: Pass ASL-202 or instructor consent.

## BA

**Business Administration****BA-101 Introduction to Business**  
4 credits, Fall/Winter/Spring

Introduction to the American business system including business organization, accounting, finance, marketing, and management. Also offered as an online course. Recommended: Placement in RD-115.

**BA-103 Business Strategies for Computer Consultants**  
3 credits, not offered every term

Class introduces the procedures for establishing and developing a successful consulting business in computer-related services including web development, network support, and computer support. Coverage includes defining business goals and mission, identifying local markets, creating a business plan for a consulting business, understanding proprietorship and partnership tax implications, accounting practices of consulting businesses, licensing issues, pricing services, promotion of the consulting business, creating consulting contracts, and consulting client management.

**BA-104 Business Math**  
3 credits, Fall/Winter

Math skills applicable to the business environment. Mark-up, mark-down, simple interest, present value, stocks, bonds, mutuals, and credit cards. Introduces accounting topics such as depreciation, financial statements, and ratios. Also offered as an online course. Prerequisite: Pass MTH-050 or place into higher level math class.

**BA-111 General Accounting I**  
4 credits, Fall/Winter/Spring

Bookkeeping and accounting systems with procedures emphasized. Accounting cycle, general and special journals, subsidiary ledgers, accounting for cash, and end-of-period operations. Also offered as an online course. Recommended: Placement in RD-115.

**BA-112 General Accounting II**  
4 credits, not offered every year

Continues studies from General Accounting I. Includes reporting standards; accounts receivables and uncollectibles; notes payable/receivables, merchandise inventory adjustments; and property, plant and equipment. Partnership entries/procedures, corporate formation, stocks, earnings, and long-term bonds. Prerequisite: Pass BA-111.

**BA-120 Project Team Tools**  
3 credits, Fall

Use project management tools to perform needs analysis, negotiating/contracting for goals and resources, work/task breakdown, project flowchart and schedule, resource allocation, time estimates, critical path, budgeting, contingency planning, project monitoring and reporting.

**BA-121 Project Management: Workshop**  
3 credits, Winter

A hands-on, interactive project management simulation. Student teams will address weekly topics in the progression of managing the project and submit a report summarizing the project experience included in the student portfolio.

**BA-122 Teamwork: Project Management**  
3 credits, Fall

Focuses on teamwork dynamics and skills for working with others; group behavior and communication skills are learned and practiced. Students study personalities, learning styles, diversity, appreciating differences and values, ethics, and achieving goals.

**BA-123 Leadership and Motivation: Project Management**  
3 credits, Winter

Focuses on the basic principles of leadership as applied to teamwork. Basic component of organizational design and management theory, leadership is a learned skill focusing on achieving objectives utilizing human, financial, material, and organizational resources.

**BA-124 Negotiation: Project Management**  
3 credits, Spring

Focuses on the basic principles of negotiation. Techniques and elements of negotiation are stressed. Students work alone and in groups to practice and demonstrate negotiation skills.

**BA-125 Risk Management: Project Management**  
3 credits, Spring

Basic principles of risk, systematic risk assessment, and management of risk in project management. Identifying/exploring basic principles of risk, including types, seriousness, and methods of dealing with risk; systematic risk techniques and assessment.

**BA-131 Introduction to Business Computing [C]**  
4 credits, Fall/Winter/Spring

Use and application of Microsoft Office. Use Word, Excel, Access, and Powerpoint to create business documents. Internet features, multitasking, and File management. Designed for business majors. Also offered as an online course. Meets computer literacy requirement. Recommended: Placement in RD-115. Prerequisite: Pass BT-120 or instructor consent.

**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. Also offered as an online course. Recommended: Placement in RD-115.

**BA-160 Purchasing I**  
3 credits, Winter

Distance Learning: Online. 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, Spring

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-211 or pass BA-111.

**BA-205 Solving Communication Problems with Technology [C]**  
4 credits, Winter/Spring

Skills and technology needed to communicate effectively. Organize and present business information electronically, including data collection, correspondence, business reporting, business presentations, and corporate communications. Meets computer literacy requirement. Recommended: Placement in RD-115. Prerequisite: Pass BA-131 & pass WR-121.

**BA-206 Management Fundamentals**  
4 credits, Fall/Winter/Spring

Concepts and theories of management with focus on planning, organizing, staffing, directing, and controlling. Organizational structures, planning principles, and international management techniques. Also offered as an online course. Recommended: Placement in RD-115.

**BA-208 Employee Labor Relations**  
4 credits, Spring

Provides legal overview of employee and labor relations in union and non-union environments. Presents a realistic picture of collective bargaining/labor relations situations and highlights contemporary issues in employee relations, unions, bargaining units, and work representatives.

**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. Also offered as an online course. Recommended: 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 and debt, and financial statements. Corporate analysis of financial position including the cash flow statement. Also offered as an online course. 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, and process, flow, and standard costing. Presentation and interpretation of accounting data to aid decisions. Also offered as an online course. Prerequisite: Pass BA-212.

**BA-216 Cost Accounting**  
3 credits, Winter

Statement analysis, budgeting, pricing concepts, production reports, cost estimation, by-products and joint products, spoilage and scrap materials, standard cost, job order, and process flow systems. Recommended: Placement in RD-115. Prerequisite: Pass BA-213.

**BA-217 Budgeting for Managers**  
3 credits, Spring

Budgeting vocabulary, finance, record keeping, cash management, cash budgeting, and capital budgeting. Recommended that students have prior course work and/or experience in accounting or work-related budgeting. Recommended: Placement in RD-115.

**BA-218 Personal Finance**  
3 credits, Spring

Distance Learning: Online. Goal setting, budgeting, use of credit, personal financial statements, consumer spending and saving, investment options, risk management, and estate and tax planning. Financial planning tools and practical self-assessment. Recommended: Placement in RD-115.

**BA-222 Financial Management**  
3 credits, Winter

Concepts, techniques, and decision process to manage a firm's sources and uses of funds. Working capital, ratio analysis, leverage, operating budgets, working capital management, cost of capital, capital budgeting, and evaluation of financial alternatives. Prerequisite: Pass BA-212.

**BA-223 Principles of Marketing**  
4 credits, Fall/Winter

Survey and application of marketing principles and vocabulary in profit and non-profit organizations. Product planning, distribution, promotion, price, and customer service are analyzed and applied. Also offered as an online course. Not offered as a lecture course every term. Recommended: 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: Placement in RD-115.

**BA-225 Business Report Writing**  
3 credits, Spring

Focuses on the skills and techniques required to write and produce professional business reports, including research, writing, formatting, and presentation. Also offered as an online course. 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 transactions. Emphasis on constitution, courts, business crimes, torts, and consumer contract law. Also offered as an online course. Recommended: 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. Also offered as an online course. Prerequisite: Pass BA-226.

**BA-229 Employment Law**  
4 credits, Spring

Offers comprehensive treatment of personnel law and seeks to bridge the gap between law and human relations management. Recommended: Placement in RD-115. Prerequisite: Pass BA-224.

**BA-238 Sales****3 credits, Spring**

Focus on professional selling principles and techniques as applied both in business and interpersonal settings. Recommended: Placement in RD-115.

**BA-239 Advertising****4 credits, Fall**

Relationship to marketing, including how advertising helps accomplish marketing objectives. Advertising planning and strategy and examination of various communication vehicles carrying the advertising message. Recommended: Placement in RD-115.

**BA-240 Governmental Accounting****4 credits, Fall**

Accounting procedures, records, and statements to summarize and disclose the results of non-profit and governmental activities. Budgetary accounting, general, special revenue, capital projects, debt service, enterprise, and proprietary funds, general fixed asset accounts, etc. Prerequisite: Pass BA-212.

**BA-242 Investing****3 credits, not offered every year**

Studies securities, investment concepts, and economic trends for the private investor. Discusses investment objectives, portfolios, corporate securities, and securities market. Also offered as an online course. Recommended: Placement in RD-115.

**BA-248 Auditing****3 credits, Spring**

Auditing standards and procedures by the CPAs in the examination and issuance of audit reports. Generally accepted auditing standards and conceptual framework necessary for collection of evidence and assessment of risk. Prerequisite: Pass BA-213.

**BA-249 Retailing****3 credits, not offered every term**

Distance Learning: Online. 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: Placement in RD-115.

**BA-250 Small Business Management****3 credits, not offered every year**

Managing a small business, identifying a market opportunity, developing a business plan, and meeting the competition. Also financial accounting and cash-flow projections. Recommended: Placement in RD-115.

**BA-251 Supervisory Management****3 credits, Winter**

Role and responsibilities of the first-line supervisor or manager. Analyzing business, dealing with change, staffing and scheduling, leadership, decision-making and motivational skills, and managing teams. Also offered as an online course. Recommended: Placement in RD-115.

**BA-254 Basic Compensation and Benefits****4 credits, Winter**

Focuses on the importance of employees as a key element of strategic compensation/benefit programs and emphasizes general compensation topics, terminology, and practical applications to the workplace.

**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: Placement in RD-115.

**BA-261 Consumer Behavior****4 credits, Spring**

Consumer behavior and its application to marketing strategies. Concepts and models of the consumer decision-making process, personal and interpersonal factors and their impact on consumer decisions. Prerequisite: Pass BA-101.

**BA-267 Organizational Development and Behavior****6 credits, Winter**

Concepts of organizational design, development and behavior wherein students study, analyze, and learn to develop systems for specific management objectives. Focus is on individual, group, and organizational leadership strategies and effective self-assessment leading to improved goal convergence and productivity.

**BA-268 Applied Project Demonstration****6 credits, Spring**

This course emphasizes the demonstration of practical project management skills, including the scope, control and analysis of professional field applications with an organization, vendor or service provider. Students will prepare and submit evidence of skill application in a planned and monitored project environment.

**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-285 Human Relations in Business****4 credits, Fall/Winter/Spring**

Basic psychology and human relations techniques in building better employer/employee relationships. Interpersonal relations both on the job and in everyday life. Recommended: Placement in RD-115.

**BC**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

**Building Construction Technology****BC-100 Construction Orientation****2 credits, Fall/Winter/Spring**

Research the materials, methods, and terminology and safety requirements of the Building Construction Trade. The course will include proper and safe use of hand and power tools.

**BC-101 Building Trades Print Reading And Math****2 credits, Fall/Winter/Spring**

Read and interpret building construction drawings; identify construction terms and information useful for estimating and scheduling e.g. building trade mathematics and practical lab exercises.

**BC-102 Introduction To Applied Building Construction**  
2 credits, Fall/Winter/Spring

Utilize Tools and Equipment to accomplish projects emphasizing basic safety. Lab projects will include concrete foundation forming as well as framing walls, floors, joist, and roofs as well as sheeting, siding, thermal and moisture protection.

**BC-103 Basic Carpentry**  
2 credits, Fall/Winter/Spring

Research the materials, techniques and safety requirements for basic carpentry and framing applications. Hand and power tools used to complete lab projects, e.g. scale building assemblies.

**BC-114 Basic Estimating**  
4 credits, Fall/Winter/Spring

Analyzes working drawings and specifications for accurate quantities and cost estimation of products and services in the building construction industry with the use of manual and computer applications.

**BC-115 Basic Scheduling**  
4 credits, Fall/Winter/Spring

Analyzes working drawings and specifications for efficient and cost-effective purchasing, delivery and application of products and services in the building trades industry construction projects.

**BC-180 Building Construction Technology/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. Practical experience in the construction trades with a contractor, supplier or construction trades service provider. Required: Instructor consent & a CWE seminar.

**BC-204 Residential Construction Codes**  
4 credits, Fall/Winter/Spring

Examines and interprets codes and regulations that govern residential one- and two-family dwellings. Course work includes structural, plumbing, electrical and mechanical codes of the International Residential Code (IRC).

**BC-205 Commercial & Residential Codes**  
4 credits, Fall/Winter/Spring

Introduces regulations concerning the commercial and industrial construction industry and utilizes International Building Code (IBC), International Mechanical Code (IMC), Plumbing Code (IPC), the National Electrical Code (NEC).

**BC-280 Construction Projects/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. Practical experience in construction project management, estimating, scheduling, site inspection or other construction professional field applications. Required: Instructor consent & a CWE seminar.

**BI**

**Biology**

**BI-055 Introduction to Human Biology**  
3 credits, Fall

Structure and function of the human body beginning with the cell; organization of tissues, organs, systems, and structure and functions of body systems. Restricted to students in the Medical Office Administrative Assistant, Clinical Assistant or Medical Assistant programs.

**BI-101 General Biology**  
4 credits, Fall/Winter/Spring/Summer

A laboratory course for non-science majors. Studies the cellular aspects of biology including genetics. Also offered as an online course Fall/Winter/Spring/Summer. Recommended: Pass MTH-060; placement in RD-115; pass WR-095 or placement in WR-121.

**BI-102 General Biology**  
4 credits, Fall/Winter/Spring/Summer

A laboratory course for non-science majors emphasizing an evolutionary approach to animal systems. Also offered as an online course Fall/Winter/Spring/Summer. Prerequisite: Pass BI-101.

**BI-103 General Biology**  
4 credits, Fall/Spring/Summer

A laboratory course for non-science majors emphasizing an evolutionary approach to plants and ecosystems. Also offered as an online course Fall/Spring/Summer. Prerequisite: Pass BI-102.

**BI-112 Biology for the Health Sciences**  
4 credits, Fall/Winter/Spring/Summer

One term preparatory biology course for students who want to take Anatomy and Physiology and/or Microbiology. Cellular aspects of biology including genetics and organ systems. Corequisite: CH-112 strongly recommended.

**BI-130 Mushroom ID & Taxonomy**  
4 credits, Fall

A lab course for liberal arts majors exploring the complexity and diversity of mushrooms in the Pacific Northwest Ecosystem. Introduction to identification, basic biological principles, life cycles, and toxicology. Field trips and collection required.

**BI-160 Bird ID & Taxonomy**  
3 credits, Spring

Bird identification, classification, behavior. Identification techniques applied to birds through lectures, slide presentations, and field trips to Malheur, Klamath Marsh, Oregon Cascades, Sauvie Island, and Oregon Coast wildlife refuges.

**BI-160L Bird ID & Taxonomy Lab**  
1 credit, Spring

A lab to accompany the BI-160 lecture. Focuses on field identification of common Oregon birds by sight, sound, and habitat.

**BI-163 Malheur Field Trip**  
1 credit, Spring

Study of plants, animals, geology, and history of High Desert Country at Malheur Environmental Field Station in southeast Oregon. Required: Instructor consent.

**BI-165D Natural History of SW Deserts**  
3 credits, Spring

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-165C Natural History/Oregon Coast**  
3 credits, not offered every term

Explores the natural processes that form our Northwest coastal environment: geologic development, shoreline processes, oceanography, and environmental hazards. Topics include the ecology of marine mammals, birds, estuaries, tidepools, sand dunes, and coastal forests.

**BI-165CL Natural History/Oregon Coast Lab**

1 credit, not offered every term

A lab to accompany the BI-165C lecture. Field trips focus on the plants, animals, geology, and environmental issues of Oregon Coast.

**BI-204 Elementary Microbiology**  
4 credits, Winter

A lab course with environmental focus. Explores microscopic life, its importance in the environment, industry and infectious disease. Labs provide practice with aseptic technique and introduces tools and methods used in the study of microorganisms.

**BI-211 Biology (Science Majors)**  
5 credits, Fall

A lab course for biology majors and preprofessional students. An evolutionary approach to cell structure, organization and metabolism, genetics and evolution. Recommended: Pass MTH-105 or pass MTH-111; placement in RD-115 & placement in WR-121 or pass WR-095. Corequisite: CH-104 or CH-221.

**BI-212 Biology (Science Majors)**  
5 credits, Winter

A lab course for biology majors and preprofessional students. An evolutionary approach to animal structure, systems and metabolism. Prerequisite: Pass BI-211. Corequisite: CH-105 or CH-222.

**BI-213 Biology (Science Majors)**  
5 credits, Spring

A lab course for biology majors and preprofessional students. An evolutionary and ecological approach to kingdoms, plant structure, systems and metabolism; ecosystems. Prerequisite: Pass BI-212. Corequisite: CH-106 or CH-223.

**BI-231 Human Anatomy/Physiology I**  
4 credits, Fall/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. Recommended: Pass MTH-095 with a "C" or better, placement in MTH-105 or MTH-111; placement in RD-115 & placement in WR-121 or pass WR-095. Prerequisites: Pass BI-112 & pass CH-112.

**BI-232 Human Anatomy/Physiology II**  
4 credits, Winter/Summer

A lab course covering structure and function of the muscular, cardiovascular, lymphatic, and respiratory systems. Prerequisite: Pass BI-231("C" or better).

**BI-233 Human Anatomy/Physiology III**  
4 credits, Spring/Summer

A lab course covering neuroendocrine control, digestive, excretory, and reproductive systems. Study of fluid, electrolyte, and acid base balance. Prerequisite: Pass BI-232("C" or better).

**BI-234 Introductory Microbiology**  
4 credits, Fall/Winter/Spring

A lab course required for nursing and dental hygiene majors (medical emphasis). Includes characteristics, physiology and growth requirements of microorganisms, interactions between humans and microorganisms, immunology, infection, and principles of microbial control. Also offered as an online course Fall/Winter/Spring. Prerequisites: Pass BI-112 preferred or pass BI-101 and BI-102. Pass CH-112 preferred or pass CH-104 and CH-105.

**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.

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**BOT****Botany****BOT-156 Plant Identification & Uses**  
4 credits, Spring

A lab course for liberal arts majors introducing botanical identification and emphasizing Native American uses of various plants commonly found in the Pacific Northwest. Basic biological principles, life cycles, floral formulas, ecology and taxonomy. Field trips and lab participation required.

**BOT-201 Botany**

4 credits, Fall, not offered every year

A lab course with an evolutionary approach to biochemistry, plant cell structure, genetics, evolution and classification. Recommended: Placement in MTH-105 or MTH-111; placement in RD-115; pass WR-095 or placement in WR-121.

**BOT-202 Botany**  
4 credits

Winter, not offered every year

A lab course with an evolutionary approach to plant tissues, organs, structure, metabolism, nutrition, development and morphogenesis. Recommended: Placement in MTH-105 or MTH-111; placement in RD-115 & placement in WR-121.

**BOT-203 Botany**  
4 credits

Spring, not offered every year

A lab course with an evolutionary approach to kingdom survey, plant phyla and orders, reproduction and ecosystems. Recommend: Placement in MTH-105 or MTH-111; placement in RD-115; pass WR-095 or placement in WR-121.

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**BT**

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**Business Technology****BT-101 Introduction to Online Learning**  
1 credit, Fall/Winter/Spring

This is an introductory course for students who are new to web-based courses. The course will include online course fundamentals, internet fundamentals, technique requirements, e-mail techniques, and tips for success in online courses.

**BT-105 Computerized Accounting**  
3 credits, Spring

Hands-on experience using integrated accounting software. Currently using Quickbooks. Emphasis on performing general ledger, accounts receivable, and accounts payable functions. Also offered as an online course. Prerequisite: Pass BA-211 or pass BA-111.

**BT-112 Front Desk: Medical Office Practice****3 credits, Fall**

Fundamental information required for employment for a front desk type clerical position in a medical office. Examines medical law and bioethics and introduces business students who plan to work at the Afront desk@ or other clerical area of a medical office to the administrative and transdisciplinary skills/competencies of the medical field.

**BT-113 Medical Coding for the Physician's Office****3 credits, Spring**

This course prepares the student for work in the physician's office in the areas of accurate medical coding and claims processing. Coding rules and applications as well as specific insurance carrier details will be presented. Prerequisite: Pass BT-145.

**BT-120 Personal Keyboarding [C]****2 credits, Fall/Winter/Spring**

Basic instruction on electronic alphanumeric keyboard. Provides practice for speed and accuracy with individuals program. Students will develop the necessary skills to effectively use the Internet, use e-mail, and create simple documents.

**BT-122 Keyboarding Skillbuilding****2 credits, Fall**

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/Winter**

Course builds communication skills through the study of correct usage of grammar, spelling, effective writing and editing principles. Also offered as an online course. Recommended: Placement in RD-115.

**BT-125 Business Editing II****3 credits, Winter**

Course follows BT-124 and will continue to build communication skills by studying correct grammar, spelling, punctuation, vocabulary usage, and writing principals. Also offered as an online course. Prerequisite: Pass BT-124, "C" or better.

**BT-145 Medical Insurance & Billing****3 credits, Winter**

Computer-based record keeping activities in a medical office including scheduling patients and preparing the daily patient list, making entries for patient accounts (receipts and statements), processing accounts payable (check writing, preparing bank deposits, and accounting for daily cash balances), and handling health insurance forms. Note: This course does not meet the requirement for the Medical Assistant certificate.

**BT-160 Word I [C]****3 credits, Fall/Winter/Spring**

Create and print a variety of business documents. Formatting skills include changing margins, indenting text, manipulating tabs, super/subscript test, and creating section/page breaks. Enhance documents using special features. Introduction to Internet. Recommended: 35 words per minute typing skill. Also offered as an online course. Prerequisite: Pass BT-120 or instructor consent.

**BT-161 Word II [C]****3 credits, Fall/Winter/Spring**

Create, customize, and print a variety of business documents, such as newspaper columns, merging letters and mailing labels, and tables. Formatting and special features. Internet usage includes creating a web page. Recommended: 40 words per minute typing skill. Also offered as an online course. Prerequisite: Pass BT-160.

**BT-170 Access [C]****3 credits, Spring**

Study and application of Microsoft Access involving database creation, queries, forms, and reports. Business applications include performing calculations on databases, adding graphics, creating multiple forms enhanced with Internet hyperlink, and composing text. Prerequisite: Pass BT-120 or instructor consent.

**BT-172 Introduction to Microsoft Outlook****1 credit, Winter**

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 notes. The material covered in this course teaches the necessary skills required in those business environments that use Outlook.

**BT-176 Excel [C]****3 credits, Winter**

Study and application of Microsoft Excel involving spreadsheets, graphics, and database. Business applications include utilizing web queries, adding hyperlink to a worksheet, saving worksheets as HTML files, and object linking and embedding with other applications. Also offered as an online course. Prerequisite: Pass BT-120.

**BT-177 Microsoft Project****3 credits, Spring**

Class covers the basics of planning a project using Microsoft Project including creating a project schedule, communicating project information, assigning resources and costs, tracing progress and closing a project. This course will conclude with students sharing project information with other people and applications using Microsoft Project.

**BT-181 FrontPage****3 credits, Spring**

Distance Learning: Online. Introduction to Microsoft FrontPage. Covers web page development and web site management using FrontPage's comprehensive set of editing and administrative tools. Web page design and editing, web site organization and management and fundamental concepts of the WWW. Prerequisite: Pass BA-131 or pass CS-121.

**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, work environment, travel, mail, and career planning. Prerequisite: Pass BT-160.

**BT-220P Desktop Publishing I: PageMaker****3 credits, Winter**

Introduction to electronic page layout and production using Adobe PageMaker. Covers fundamental program functions and techniques for working with text and graphics to create professional-looking business publications. Also offered as an online course. Prerequisite: Pass BA-131 or pass CS-121, or instructor consent.

**BT-262 Integrated Projects [C]**  
3 credits, Spring

Advanced level Microsoft Word uses desktop publishing attributes in creating business forms, outlines, master documents, templates, and specialized tables and indexes. Advanced formatting features and functions. File management. Introduction to machine transcription. Recommended: 45 words per minute typing skill. Prerequisite: Pass BT-161.

**CAD**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

**Computer-Aided Drafting**

See also Drafting (CDT).

**CAD-141 AutoCAD LT Level I**

3 credits, Fall/Winter/Spring/Summer  
Distance Learning course. AutoCAD LT user interface, drawing setup parameters, coordinate entry, 2D geometric entities, line types, object snaps, selection sets, display control functions, text creation, 2D editing commands, inquiry commands, layers and basic dimensioning.

**CAD-142 AutoCAD LT Level II**

3 credits, Fall/Winter/Spring/Summer  
Distance Learning course. Advanced features of AutoCAD LT. Dimensioning techniques/styles. Creating/managing symbols, externally referenced files and block attributes. Multi-view paper space layout, 3D drafting options, customized menus, and Internet utilities. Recommended: CAD-141.

**CAD-149 Special Projects/CAD**

1-6 credits, not offered every term  
Content varies based on student objectives.

**CAD-151 AutoCAD Level I**

3 credits Fall/Winter/Spring/Summer  
Introduction to AutoCAD basics including drawing setup, coordinate entry methods, 2D drawing and editing, object snaps, polar tracking, text management, display control, utilizing layers and basic plotting techniques. Recommended: Working knowledge of Windows.

**CAD-152 AutoCAD Level II**

3 credits Fall/Winter/Spring/Summer  
Advanced AutoCAD features including drawing and editing complex lines, dimensioning techniques, hatching, creating blocks and symbol libraries, managing block attributes, working with external references (xrefs). Recommended: CAD-151.

**CAD-155 AutoCAD Customization**

3 credits, not offered every term  
Covers the techniques for customizing the AutoCAD interface and support files. Topics include: adding command aliases, customizing menus and tool palettes, creating command macros, custom linetypes and hatch patterns, writing script files, VisualLisp programs and VBA macros. Recommended: CAD-152.

**CAD-156 AutoLISP I**

3 credits, not offered every term  
Introduction to AutoLISP to create custom command functions. Recommended: CAD-155.

**CAD-157 AutoLISP II**

3 credits, not offered every term  
Advanced AutoLISP functions to create custom commands. Recommended: CAD-156 or equivalent competency.

**CAD-170 Intro to VBA Programming**

1 credit, not offered every term  
Introduction to Visual Basics for Applications (VBA) programming language for AutoCAD. Basics of VBA are explained so that students can create VBA macros that create and modify AutoCAD entities, interact with the user, select drawing objects and manage AutoCAD's symbol tables.

**CAD-171 Advanced VBA Programming**

1 credit, not offered every term  
Advanced VBA programming techniques including how to manage blocks and attributes, work with xrefs, and plot drawings. Other topics include how to create programs using VBA forms and share data with other Microsoft applications using ActiveX/Automation. Recommended: CAD-170.

**CAD-210 Autodesk Architectural Desktop**

2 credits, not offered every term  
Explore uses of Architectural Desktop to create a virtual building model. Covers walls, windows, doors, roofs, and stairs according to real world properties. Create model which generates floor plans, elevations, and sections.

**CAD-220 Microstation for Autocad User**

1 credit, not offered every term  
Presents a quick summary of specific features in AutoCAD, followed by the related features in MicroStation. Designed for those who work with both products, or will transition from AutoCAD to MicroStation software.

**CAD-251 Autodesk Land Desktop**

2 credits, not offered every term  
Use LDT to plan and edit sites, as well as create and label survey points, create and edit surfaces and contours, define and label roadway alignments, size and label parcels. Recommended: CAD-152 or AutoCAD experience.

**CAD-252 Autodesk Land Desktop - Civil Design**

2 credits, not offered every term  
Analyze project data, create existing and finished ground profiles, use roadway templates for transportation engineering, site development and grading, perform volumetric calculations, define pipe runs, hydrological site analysis, automate sheet creation. Recommended: CAD-251.

**CAD-255 Autodesk Map**

1 credit, not offered every term  
Digitize maps; import ESRI® and Microstation® files; clean-up maps; share maps across network; manage attribute data; attach databases to maps; build and query topologies; create thematic maps and legends; integrate georeferenced images; and plot map sets. Recommended: CAD-251.

**CAD-293 SolidWorks**

4 credits, not offered every term  
Introduction to parametric solid modeling. Create sketches and build solid models. Create fillets, cuts, chamfers, holes, shells, lofts, and sweeps. Extract 2D documentation from 3D models, and detail the drawings. Build a mechanical assembly.

**CAD-295 Autodesk Inventor**

3 credits, not offered every term  
Fundamentals of Autodesk Inventor. Covers features necessary to create and edit parts, assemblies, and drawings in 3D solid modeling design format. Covers basic modeling techniques and introduces Inventor's Design Support System. Recommended: Windows and Excel knowledge.

**CDT**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

**Drafting**

See also Computer-Aided Drafting (CAD).

**CDT-101 Drafting Technology Survey**  
1-3 credits, Fall/Winter/Spring

Course provides a detailed look at the field of Drafting Technology. It includes an examination of the different drafting disciplines and the companies, both locally and worldwide, that hire drafters.

**CDT-102 Sketching and Problem Solving**  
1-3 credits  
Fall/Winter/Spring/Summer

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  
Fall/Winter/Spring/Summer

Introduction to drafting applications using AutoCAD. Problem solving, drawing layout, orthographic multi-view projection, line types, geometric construction, current drafting techniques. Use industry standards for CAD drawing, editing, file management, dimensions and notes.

**CDT-104 Professional Computing Basics [C]**  
1-3 credits  
Fall/Winter/Spring/Summer

Professional computing techniques, knowledge, skills, fundamentals of computing equipment, specifications, terminology, and CAD software, Windows functions and environment. Create and manage network file systems. Internet, E-mail, Web Browsers. Create professional technical documents.

**CDT-105 Computer-Aided Drafting II**  
1-4 credits

Fall/Winter/Spring/Summer

Create, modify, and manage dimension styles for multiple industry disciplines. Dimensioning with tolerances. Scaled drawing output to plotting device using paper space layouts and viewports. Mechanical drawings, multi-view projection, auxiliary views. Recommended: CDT-103.

**CDT-106 Applied Descriptive Geometry**  
1-3 credits, Fall/Winter/Spring

Graphical solutions to imaginary and visualization problems. Applies concepts of true length, true shape, and point location, to simplify complex design problems. Recommended: CDT-103 & MTH-050.

**CDT-107 Computer-Aided Drafting III**  
1-4 credits

Fall/Winter/Spring/Summer

Create and manage symbols, and utilize externally referenced drawings. Attribute definition, editing, and management. Drawing thread representations, fasteners, springs, surface finishes, section views, and welding symbols. Total drawing environment management and editing. Recommended: CDT-105.

**CDT-108 CAD 3D**  
1-3 credits

Fall/Winter/Spring/Summer

Construct 3D surface and solid models using 3D coordinates, user coordinate systems, and standard editing commands. Create a rendered scene of the 3D model with lighting and shading. Recommended: CDT-103, CDT-104 & CDT-105.

**CDT-108A Introduction to Solid Modeling**  
1-3 credits, Fall/Spring

Parametric solid modeling. Design 3D parts and assemblies. Implement 2D documentation of 3D parts to industry standards. Build a mechanical assembly. Develop sheet metal flat patterns. Create working kinematic sketches.

**CDT-109 Project Drafting I**  
1-5 credits

Fall/Winter/Spring/Summer

Course is designed to incorporate the necessary detail and assembly drawings required to describe industrial products. Special emphasis is placed on use of Machinery's Handbook, ASME standards, vendor information, and other general references. Recommended: CDT-105 & MTH-080

**CDT-109A Project Drafting I – CAD/CAM**  
1-2 credits

Fall/Winter/Spring/Summer

Course is designed to incorporate the necessary detail and assembly drawings required to describe industrial products. Special emphasis is placed on use of Machinery's Handbook, ASME standards, vendor information, and other general references. Recommended: CDT-105

**CDT-110 Kinematics Drafting**  
1-3 credits, Fall/Spring

Course introduces students to techniques required of drafters who work with machine designers. Students learn symbols common to kinematics drafting. CAM design, gears and belt/chain drives presented. Emphasis placed on using parts catalogs and Machinery's Handbook. Recommended: CDT-105, CDT-106. MTH-080

**CDT-111 Geometric Dimensioning & Tolerancing**  
1-3 credits

Fall/Winter/Spring/Summer

ASME Y14.5M application. Three-plane theory, interpret terms and symbols of geometric tolerancing: apply form, profile and location tolerances on drawings. Includes print reading. Also offered as Distance Learning course. Recommended: CDT-101, CDT-105, MTH-050.

**CDT-111A Refresher Course/Geometric Dimensioning & Tolerancing Exam**  
2 credits, not offered every term

Principles of Geometric Dimensioning and Tolerancing as interpreted in ASME Y 14.5M-1994. Reference to practices as well as modifications to the ANSI Y 14.5-1982. For inspectors, machinists, drafters, and engineers preparing for the certification exam.

**CDT-201 AutoCAD Customization**

1-3 credits, Winter/Spring/Summer

Covers techniques for customizing the AutoCAD interface and support files. Includes adding command aliases, customizing menus and tool palettes, creating command macros, custom linetypes and hatch patterns, writing script files, VisualLisp programs and VBA macros. Recommended: CDT-105.

**CDT-202 Architectural Drafting I**

1-4 credits

Fall/Winter/Spring/Summer

Drawings required to get a building permit. Creating drawing blocks typically used in compiling a set of plans as well as the drawings of a floor, roof, electrical and foundation plans, elevations, and wall sections. Recommended: CDT-105, MTH-050.

**CDT-203 Sheet Metal Drafting**

1-3 credits, Winter/Spring/Summer

Introduction to drawing HVAC plans, and the basics of pattern development, material bending, seams, and intersection of geometric shapes used in the sheet metal fabrication industry. Recommended: CDT-105, CDT-106, MTH-050.

**CDT-204 Civil Drafting**

1-3 credits, not offered every term

Course covers leveling, longitude and latitude, map scales, symbols, legal descriptions, plot plans, contours, profiles, and cut and fill (earthworks). The course explores many aspects of civil drafting. Prerequisite: CDT-105 or equivalent experience.

**CDT-206 CAD/CAM Integration**

1-2 credits, Fall/Spring

Convert CAD drawings to computer numerical control (CNC) machine code. Create tool paths and write code for machining mechanical parts. Includes machining projects developed using a variety of industry-standard software. Recommended: CDT-105.

**CDT-207 Introduction to AutoLISP**

1-3 credits

Fall/Winter/Spring/Summer

Introduction to AutoLISP programming language. Basics of AutoLISP are explained so students can create AutoLISP functions and program files that automate repetitive or redundant tasks, define new AutoCAD commands and increase drafting productivity. Recommended: CDT-201

**CDT-208 Schematic Drafting**

1-3 credits, not offered every term

Course introduces students to drafting documents encountered in electrical and electronic drafting. Student is not required to know electrical or electronics, but will be introduced to component layout and basic understanding of circuits. Recommended: CDT-105.

**CDT-209 Structural Drafting I**

1-3 credits

Fall/Winter/Spring/Summer

Methods and drawings of commercial drafting. Includes creating drawing details typically associated with timber, steel, concrete block, and cast in place concrete construction. Using engineering sketches, making revisions and specifying materials using standard reference materials. Recommended: CDT-105, CDT-202.

**CDT-210 Industrial Pipe Drafting**

1-3 credits, not offered every term

Course explores types of drawings related to industrial pipe drafting: flow diagrams, general arrangements, plans, elevations, isometrics, and spool drawings. Emphasizes proper layout techniques, line weights, pipe fitting symbols, dimensioning, labeling standards, and vendor catalogs. Prerequisite: CDT-105. Recommended: MTH-080.

**CDT-211 CAD Technical Communication**

1-3 credits, Fall/Spring

Explores isometric drawing in AutoCAD. Creation of reports with graphics utilizing a variety of software. Covers operation manuals, use of graphics, tables, and imported images in constructing a formal report. Construct a resume and portfolio. Prerequisites: CDT-107, CDT-108, WR-101.

**CDT-212A Architectural Drafting II**

1-3 credits

Fall/Winter/Spring/Summer

Create architectural drawings of single-level residence. Visit homes, observe common design practices, and assemble photos. Create a floor plan, site plan, roof plan, front elevation, sections, cabinet drawings, and working drawings fully explaining design. Prerequisite: CDT-202. Corequisite: CDT-212B. Recommended: CDT-214.

**CDT-212B Architectural Materials**

1-2 credits

Fall/Winter/Spring/Summer

Create structural drawings for residence drawn in CDT-212A using western platform construction and engineered lumber. Explore methods of sizing required structural materials for plan using varied methods, complete roof framing, wall framing and foundation plan. Co-requisite: CDT-212A. Recommended: MTH-050.

**CDT-213 Architectural Drafting III**

1-4 credits

Fall/Winter/Spring/Summer

Design and complete a set of plans for a one story structure with a daylight basement constructed using western platform construction methods. Students design all structural members and are introduced to methods used to resist lateral forces. Prerequisite: CDT-212A, CDT-212B.

**CDT-214 Building Codes**

1-2 credits, not offered every term

Introduces building codes that govern residential and light commercial construction in the Portland Metropolitan tri-county area. Explore codes as they relate to access, egress, construction methods and ADA requirements.

**CDT-215 Structural Drafting II**

1-4 credits

Fall/Winter/Spring/Summer

Complete a partial set of architectural and structural drawings for a concrete block structure. Projects include some design as well as working from engineering sketches and calculations. Prerequisite: CDT-209.

**CDT-216 Structural Drafting III**

1-4 credits

Fall/Winter/Spring/Summer

Complete a partial set of architectural and structural drawings for a tilt-up concrete structure. Project includes some design as well as working from engineering sketches and calculations. Prerequisite: CDT-215.

**CDT 217 Introduction to Remodeling**

1-4 credits, Fall/Winter/Spring

Create residential project consisting of design and drafting of an addition to an existing single-family residence. A commercial project involves the drafting of tenant improvements for the warehouse completed in CDT-215. Prerequisite: CDT-212A, CDT-212B, CDT-215.

**CDT-219 Architectural Detailing**  
1-3 credits, Fall/Winter/Spring

Create common details associated with wood frame construction including common single and multi-level framing connections using lumber and engineered materials, lateral connections, and a fireplace section. Prerequisite: CDT-202. Corequisite: CDT-213.

**CDT-223 Inventor Fundamentals**  
1-3 credits, not offered every term

Introduces AutoCAD Inventor as a feature-based, parametric 3D design tool. Develops fundamental knowledge in part and assembly modeling, using adaptive features and parts, utilizing work groups, surfacing basics, managing data and the Engineer's Notebook. Recommended: Basic working knowledge of Windows operating system and Microsoft Excel.

**CDT-224 Professional Web Design**  
1-3 credits, not offered every term

Introduction to the design, creation and management of professional web pages. Basic and intermediate HTML document creation, introduction to JAVASCRIPT, use and manipulation of graphic image files, animating web page graphics, HTML forms. Recommended: CDT-104.

**CDT-225 Advanced Solid Modeling**  
1-3 credits, not offered every term

Advanced features of Solid Works will be discussed and problems will be worked that exemplify them. Subjects include equations, configurations, design tables and dynamics. Prerequisites: CDT-108A or CAD-293 or instructor consent.

**CDT-226 VBA for Autocad**  
1-3 credits, not offered every term

An introduction to Object Oriented Programming using the Visual Basic for application (VBA) programming language for AutoCAD. The basics of Visual Basic programming are explained to demonstrate how to create useful VBA macros. Prerequisite: CDT-207.

**CDT-280 Drafting Technology/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. Students keep a bi-weekly employment log and prepare a portfolio including a resume, sample drawings, and recommendations. Required: Instructor consent & a CWE seminar.

**CDT-281 Drafting Technology**  
Accelerated Degree/CWE  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. Combines work experience in drafting and design with preparation of an updated resumé and an information interview. Corequisite: CWE-281 for Drafting Technology Accelerated Degree students. Required: Instructor consent.

**CDT-282 Drafting Technology**  
Accelerated Degree/CWE  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. Combines work experience in drafting and design with company research and networking, and time management. Corequisite: CWE-282 for Drafting Technology Accelerated Degree students. Required: Instructor consent.

**CDT-283 Drafting Technology**  
Accelerated Degree/CWE  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. Combines work experience in drafting and design with dealing with angry people, diversity in the work place, and sexual harassment. Corequisite: CWE-283 for Drafting Technology Accelerated Degree students. Required: Instructor consent.

**CDT-284 Drafting Technology**  
Accelerated Degree/CWE  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. Combines work experience in drafting and design with vertical and horizontal working relationships, the mutual reward theory, ethics in the work environment, age difference, irritation threshold, and leadership goals. Corequisite: CWE-284 for Drafting Technology Accelerated Degree students. Required: Instructor consent.

**CDT-295 Tool Design**

1-3 credits, not offered every term

Introduces techniques and resources required to design industrial tools. Covers design of jigs and fixtures, and print reading for tool designers, CAD techniques, purchased components, and clamping work pieces. Recommended: CDT-105 or equivalent experience.

**CDT-296 Tool Design II**

1-3 credits, not offered every term

Advanced tool design techniques emphasizing the design of tools and fixtures, complex fixturing problems and correct detailing techniques. Complete tool design projects using AutoCAD. Recommended: CDT-295.

**CH****Chemistry****CH-104 Introductory Chemistry**  
5 credits, Fall/Winter/Spring/Summer

Transfer sequence for students in nursing, allied health fields, and liberal arts. Observation, measurement, composition, stoichiometry, atomic structure, periodic table, bonding, and nomenclature. Also offered as an online + lab course. Prerequisite: Pass MTH-065.

**CH-105 Introductory Chemistry**  
5 credits, Winter/Spring/Summer

Heat; molecular and ionic interactions in solids, liquids, gases, and solutions; chemical reactions including acid-base, electron transfer, and equilibrium. Also offered as an online + lab course. Prerequisite: Pass CH-104.

**CH-106 Introductory Chemistry**  
5 credits, Fall/Spring/Summer

Organic and biochemistry. Also offered as an online + lab course. Prerequisite: Pass CH-105.

**CH-112 Chemistry for the Health Sciences**

4 credits, Fall/Winter/Spring

One-term preparatory chemistry course for students who want to take Anatomy and Physiology and/or 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: MTH-065. 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. Corequisite: MTH-095.

**CH-221 General Chemistry**  
5 credits, Fall/Winter

Transfer 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 pass CH-104 & CH-105; & pass MTH-095.

**CH-222 General Chemistry**  
5 credits, Winter/Spring

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

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**  
4 credits, Fall

First term of a transfer sequence 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**  
4 credits, Winter

Second term of a transfer sequence meeting organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering, and biology majors. Prerequisite: Pass CH-241.

**CH-243 Organic Chemistry**  
4 credits, Spring

Third term of a transfer sequence meeting organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering, and biology majors. Prerequisite: Pass CH-242.

**CIV**

Courses with this prefix will not transfer with credit 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 or in small groups, taking quizzes after completing separate modules. Required: Instructor consent.

**CJA****Criminal Justice****CJA-101 Criminology**  
3 credits, Spring

Discusses the nature and control of crime and delinquency. Examines criminal behaviors, legal aspects of crime control and treatment processes. Socio-psychological study of crime from the criminal point of view. May be offered online.

**CJA-110 Introduction to Law Enforcement**  
3 credits, Fall

Explores theories, philosophies, and concepts of U.S. criminal justice administration. Examines past, present and future operations of criminal justice including unique vocabulary used within the system. Studies interrelated components of the U.S. criminal justice system. May be offered online.

**CJA-112 Patrol Procedures**  
3 credits, Fall

Describes the nature and purpose of patrol activities for the law enforcement officer. Includes routine and emergency procedures and types of patrols.

**CJA-120 Judicial Process**  
3 credits, Winter

Studies the judicial and social processes from arrest through appeal including jurisdiction of state and federal courts. May be offered online.

**CJA-122 Criminal Law**  
3 credits, Fall

Examines the elements, purpose and functions of criminal, traffic, juvenile and liquor laws. May be offered online. (formerly Oregon Law)

**CJA-130 Introduction to Corrections**  
3 credits, Fall/Winter

Examines the history, organization, and development of correctional institutions. Includes detention facilities and treatment processes such as sentencing, incarceration, probation and parole. May be offered online.

**CJA-134 Correctional Institutions**  
3 credits, Winter

Analyzes prisons, jail and other correctional institutions. Discusses punishment history/rationale. Identifies functions of custodial staff and describes institutional procedures: reception, classification, program assignment, release. Studies prisons management system and examines juvenile facilities. May be offered online.

**CJA-137 Mass Murders/Serial Killers**  
3 credits, not offered every term

Exploration into mass murders and serial killings, and the impact each has on society and individual victims. Examines issues of causation and the social environmental linkage of recent and notorious cases including the mind set of offenders.

**CJA-138 Terrorism/Impact/Strategies**  
3 credits, not offered every term

Examines domestic/ international threat of terrorism and basic security issues facing law enforcement today including information and discussion on historical social causes of terrorism.

**CJA-140 Introduction to Crime Analysis (CA)**

1 credit, Fall/Winter/Spring/Summer  
Examines history and development of Crime Analysis in the field of criminal justice. Identifies three categories of Crime Analysis; four functions within each category; the tasks and products associated with each category. Only offered online.

**CJA-141 Introduction to Crime Mapping**  
1 credit, Fall/Winter/Spring/Summer

Examines evolution of crime mapping in law enforcement. Describes basic uses: tactical, strategic, and administrative crime analysis. Includes: pin map, grid mapping, GIS for crime analysis, geocoding for Law Enforcement. Only offered online. Prerequisite: CJA 140

**CJA-142 Statistics for Crime Analysis**  
1 credit, Fall/Winter/Spring/Summer

Introduces mathematical/statistical tools needed for simple crime analysis through statistics. Only offered online. Prerequisite: CJA-140

**CJA-143 Crime Analysis (CA) and Statistical Analysis**

1 credit, Fall/Winter/Spring/Summer  
Explores statistical tools application in CA and demonstrates use in: Tactical, Strategic, and Administrative CA. using case-study method. Only offered online. Prerequisite: CJA- 140, CJA-142.

**CJA-144 Crime Analysis( CA) via Modus Operandi (MO)**

1 credit, Fall/Winter/Spring/Summer  
Examines tactical CA through MO analysis, characteristics to identify factors for crime types/classifications to provide solvability factors and suspect identification. Only offered online. Prerequisite: CJA-140.

**CJA-145 Crime Analysis (CA) Capstone**  
1 credit, Fall/Winter/Spring/Summer

Final course of basic CA series. Case - study methodology used to formulate real decisions, use of proper application of statistical and mapping tools, including modus operandi analysis. Only offered online. Prerequisite: CJA-140, CJA-142, CJA-144.

**CJA-146 Crime Analysis (CA)/Link Analysis**

1 credit, Fall/Winter/Spring/Summer  
Examines tactical CA through LA and other forms of graphic analysis. Presents development of the graphic analytical techniques of link analysis, flow chart analysis, and telephone toll analysis. Only offered online. Prerequisite: CJA-140.

**CJA-147 Profiling Violent Crimes**

1 credit, Fall/Winter/Spring/Summer  
Examines: psychological profiling history: arson, murder, rape, pedophilia, terrorism. and misuses, such as racial profiling. Only offered online. Prerequisite: CJA-140.

**CJA-148 Crime Scene Analysis Profiling**  
1 credit, Fall/Winter/Spring/Summer

Provides case-study methodology using rape and serial murder psychological profiling examples. Only offered online. Prerequisite: CJA-140, CJA-147.

**CJA-149 Research Methods/Crime Analysis**

1 credit, Fall/Winter/Spring/Summer  
Examines statistical information needed for research of administrative crime analysis. Demonstrates survey methodology for measuring crime and its impact. Only offered online. Prerequisite: CJA-140.

**CJA-150 Introduction to Police Intelligence**

1 credit, Fall/Winter/Spring/Summer  
Examines the basic police intelligence mission. Demonstrates five-step intelligence process, illustrates differences between tactical (investigative unit) intelligence, strategic intelligence, and operational intelligence. Discusses legal limitations to intelligence information gathering. Only offered online. Prerequisite: CJA-140.

**CJA-151 Crime Intelligence Analysis (CIA)**  
1 credit, Fall/Winter/Spring/Summer

Discusses legal limitations to intelligence information gathering: basic police intelligence mission, five-step intelligence process, Illustrates differences between tactical (investigative unit) intelligence, strategic intelligence, and operational intelligence. Only offered online. Prerequisite: CJA-140, CJA- 150.

**CJA-152 Crime Scene Analysis (CSA) Capstone**

1 credit, Fall/Winter/Spring/Summer  
Final course of CSA series uses case-study methodology to examine a crime scene and formulate real decisions using proper application of analytical tools. Only offered online. Prerequisite: CJA-140, CJA-147, CJA-148, CJA-149.

**CJA-153 Crime Intelligence Analysis (CIA) Capstone**

1 credit, Fall/Winter/Spring/Summer  
Final part of CIA series. Students demonstrate: threat assessments, threat summaries, threat estimates, CIA reports, recommendations, and supporting documentation, such as link analysis tools. Only offered online. Prerequisite: CJA-140, CJA-146, CJA -150, CJA-151.

**CJA-200 Community Relations & Policing**  
3 credits, Fall

Examines the interrelationships and role expectations of agencies and public policy. Explores racial community tension, minority group crime, social forces, community policing and police image. May be offered online.

**CJA-201 Juvenile Delinquency**  
3 credits, Winter/Spring

Surveys the nature and extent of delinquent behavior. Explores causes, legal apprehension, controls and treatment. May be offered online.

**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. Identifies similarities, differences, and elements of proof needed under state statutes. Prerequisite: CJA-210.

**CJA-212 Criminal Investigation III**  
3 credits, Spring

As the third and final part of the Criminal Investigation series, this course allows for practical application of techniques described in CJA-210 & CJA-211 Criminal Investigation I & II. Course will include investigative techniques from a practical aspect, with some "hands-on" experimentation, including fingerprinting, photography, diagramming, and reconstruction. Prerequisite: CJA-211.

**CJA-213 Interview & Interrogation**  
3 credits, Winter

Examines the dynamics of psychology in criminal interrogation and legal limitations. Includes behavior observation and interpretation, and the use of structured questions to acquire truthful responses.

**CJA-220 Substantive Law**  
3 credits, Winter

Studies historical development, philosophy of law, and constitutional provisions. Examines the definition and classification of crime, application to administration of justice, legal research, study of case law, methodology, and concepts of law as a social force.

**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, Fall

Introduces ethical issues, questions/challenges facing policing/corrections professionals. Emphasizes recognition of ethical issues and personal/professional skills in decision making and consequences of unethical conduct, and the Law Enforcement code of Ethics.

**CJA-230 Juvenile Corrections**  
3 credits, Spring

Studies historical and contemporary perspectives on juvenile offenders, juvenile code, juvenile court and procedures. Describes treatment programs and the differences between adult and juvenile court laws and procedures. May be offered online.

**CJA-232 Corrections Casework**  
3 credits, Fall

Describes interviewing and counseling techniques used by corrections officers in one-on-one contacts with clients. Stresses positive relationships and behavior modification related to the reintegration process.

**CJA-240 Cultural Diversity/Law Enforcement**  
3 credits, Spring

Provides information and guidelines on how law enforcement professionals can work effectively with diverse cultural groups, both inside their organizations as well as in the community. Explores racial profiling, hate crimes, community based policing, undocumented immigrants, and alternative lifestyles in law enforcement.

**CJA-243 Narcotics & Dangerous Drugs**  
3 credits, Winter

Introduces the societal problems of drug abuse (alcohol, drugs, narcotics). Includes identification of drugs and causes of addiction. Examines investigative techniques, i.e. undercover, sting, and use of informants. May be offered online.

**CJA-280 Criminal Justice/Corrections/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

Identifies employment opportunities in the criminal justice or corrections systems. Students must be enrolled full-time in the criminal justice or corrections program. Inclusive CWE seminar. Required: Course-associated practicum.

**CJA-281 Criminal Justice/Corrections/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

Identifies employment opportunities in the criminal justice or corrections systems. Students must be enrolled full-time in the criminal justice or corrections program. Inclusive CWE seminar. Required: Course-associated practicum.

**CLA**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

**Clinical Laboratory Assistant****CLA-100 Introduction to Health Care**  
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

Includes state and federal regulations, quality assurance practices, laboratory terminology, staffing, and a basic understanding of quality laboratory testing in the clinical laboratory. Required: Instructor consent. Corequisite: BI-055.

**CLA-102 Clinical Laboratory Assistant Skills II**  
4 credits, Winter

Addresses hematology and urinalysis. Students will be required to perform various waived tests and demonstrate an understanding of the necessity of accuracy and attention to detail. Required: Instructor consent. Prerequisite: Pass CLA-101.

**CLA-103 Clinical Laboratory Assistant Skills III**  
4 credits, Spring

Continuation of CLA-102. Focuses on clinical chemistry, immunology, and microbiology. Required: Instructor consent. Prerequisite: Pass CLA-102.

**CLA-115 Laboratory Administrative Skills**  
2 credits, Winter

Designed for the Clinical Laboratory Assistant students employed in the ambulatory care setting. Laboratory billing, administrative duties, vital signs, and EKG techniques will be discussed. Required: Instructor consent.

**CLA-119 Phlebotomy/Laboratory/Practicum I**  
2 credits, Winter

Supervised assignment to area medical center laboratories to gain practical experience. May not be challenged. Required: Instructor consent.

**CLA-120 Phlebotomy/Laboratory/Practicum II**  
4 credits, Spring

Supervised assignment to the ambulatory care centers to gain practical experience. May not be challenged. Required: Instructor consent.

**CLA-125 Introduction to Clinical Research**  
2 credits, not offered every term

Overview of research as applied through clinical studies. Includes the elements of proper research techniques as conducted under the supervision of a physician or Ph.D.

**CPL*****Credit for Prior Learning*****CPL-120 Prior Learning Portfolio Development**

1-3 credits

Fall/Winter/Spring/Summer

Students are guided through the process of requesting college credit for learning acquired through work experience, volunteer work, industry training, etc. Develop a portfolio correlating non-traditional learning experiences with related courses at Clackamas Community College and prepare a resumé for credit. Prerequisite: Placement in RD-115. Required: Instructor consent.

**CS*****Computer Science*****CS-090 Computers for New Users [C]**

2 credits, Fall/Winter/Spring/Summer

For those with no computer experience. Includes using a keyboard and mouse, making commands in Windows programs, using computer programs to accomplish a task, use of a word processor, e-mail, and the Internet. Takes place in the computer lab, one student to a computer.

**CS-091 Computers for New Users II [C]**

2 credits, Fall/Winter/Spring/Summer

Follow-up of CS-090. More work with applications, including word processing, and spreadsheet. Windows file management. 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 [C]**

3 credits, not offered every year

Este es un curso en Español. Para aquellas personas sin experiencia alguna en computación. Incluye el uso del ratón, la administración de archivos en programas de Windows, la creación de una hoja de trabajo, cómo enviar y recibir e-mail, y cómo navegar en el Internet. Taught in Spanish. Requires no computer experience. Includes using a keyboard and mouse, introduction to Windows, managing files in Windows programs, using Office 2003 applications, e-mail, and the Internet. Takes place in the computer lab, one student per computer.

**CS-093S Computers for New Users II, Spanish [C]**

3 credits, not offered every term

Clase en Español para aquellas que ya tomaron la clase CS-092S. Usted estará disponible para crear, modificar, dar formato e imprimir una hoja de cálculo sencilla utilizando el programa Microsoft Excel y una pequeña presentación en PowerPoint. For those who have taken CS-092S. Create, modify, format, and print simple worksheets in Excel, tables, queries, and reports in Access, and basic presentations in PowerPoint. Prerequisite: Pass CS-092S.

**CS-094S Database & Web Design, Spanish [C]**

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 2003. Además, esta clase introduce conocimientos básicos necesarios para comenzar con el diseño de páginas Web utilizando Microsoft FrontPage 2003 como editor. El curso incluye la creación, actualización y mantenimiento de sitios en la red internacional de datos (Internet) o en una red interna (Intranet). This interactive class introduces basic concepts about a relational database using Microsoft Access 2003 and introduces basic elements of beginning web page design to create, update and maintain web pages in your Internet or intranet web site using Microsoft FrontPage 2003. Prerequisite: Pass CS-093S or equivalent class.

**CS-120 Survey of Computing [C]**

4 credits, Fall/Winter/Spring/Summer

A survey course to familiarize students with computers, computer terminology, how a computer works, and the computer's effect on society. Uses Word processing, spreadsheet, database management, graphics, e-mail, Internet, presentation graphics, and Windows file management. Also offered as an online course. Prerequisites: Pass CS-090 or placement in CS-120; pass WR-095 or placement in WR-121.

**CS-121 Computer Applications [C]**

3 credits, Fall/Winter/Spring/Summer

Continuation of CS-120. Hands-on approach to word processing, database management, electronic spreadsheets and graphics. Uses Word, Excel, and Access. Also offered as an online course. Prerequisites: Pass CS-120 or placement in CS-121 & pass MTH-060 or placement in MTH-065.

**CS-125H HTML & Web Site Design [C]**

3 credits, Fall/Winter/Spring

Hands-on approach to planning, design, development, and maintenance of published web sites primarily using HTML tags in a text editor. Includes basic page structure, hyperlinks, images, tables, frames, styles, and limited scripting. Brief introduction to page editors. Also offered as an online course. Recommended: Pass CS-121 or equivalent experience.

**CS-125P Computer Publishing [C]**

3 credits, Winter

Desktop publishing using MS Publisher: modifying and publishing professional documents. Presentation software using MS PowerPoint: creating, modifying, and publishing presentation slide shows. Multimedia presentation using MS Producer. Web page creation using MS FrontPage: creating, modifying, and publishing of HTML documents.

**CS-133S Web Application Development I [C]**

3 credits, Fall

Design, programming, and testing of scripted web pages and server submittal using JavaScript, ASP, and PHP. Introduction to server-side programming and fundamental concepts of interactive web pages, program control statements (sequence, conditional statements, repetition), variables, database access, and functions. Also offered as an online course. Prerequisites: Pass CS-125H; pass MTH-065 or placement in MTH-095.

**CS-133VA Visual Basic for Applications [C]****3 credits, Spring**

Distance Learning: Online. Using Visual Basic for Applications to develop advanced application features for MS Word, Excel, Access, and PowerPoint. Topics will cover VB editor, objects, properties, variables, repeating statements, debugging codes, and integrating applications. Prerequisite: Pass CS-121 or pass BA-131.

**CS-133VB Visual Basic.NET I [C]****3 credits, Fall/Winter/Spring**

Hands-on approach to software design using object-oriented programming. Planning an application, building a user interface, using variables and constants, calculating, accumulating, counting, making decisions, using functions, using menus. Prerequisites: Pass BA-131 or pass CS-121; pass MTH-065 or placement in MTH-095.

**CS-135DB Advanced Database [C]****3 credits, Fall**

Using MS Access for design, construction, and documentation of a database management system. Designing reports, customizing forms, advanced form techniques, OLE fields, changing and customizing tables, creating and using macros, creating and using an application system. Also offered as an online course. Recommended: Pass CS-121; pass MTH-065 or placement in MTH-095.

**CS-135I Advanced Internet Applications [C]****3 credits, Fall/Spring**

Plan and publish standards-based, accessible web sites by exploring a variety of software tools, including Macromedia Dreamweaver and Fireworks. Utilize existing scripts, audio, video, CSS, and other emerging technologies. Emphasis on professional design techniques. Also offered as an online course. Prerequisite: Pass CS-125H.

**CS-135S Advanced Spreadsheet [C]****3 credits, Spring**

Using MS Excel for design, construction, and documentation of advanced spreadsheets. Templates, multiple worksheets, complex formulas, advanced chart features, Visual Basic macros, sorting, database capabilities. Also offered as an online course. Recommended: Pass CS-121; pass MTH-065 or placement in MTH-095.

**CS-135W Advanced Word Processing [C]****3 credits, Winter**

Using MS Word for advanced word processing features: tables, merging form letters and data source files, desktop publishing, large document capabilities (including master documents and indexes), and linking and embedding objects in a document. Also offered as an online course. Recommended: Pass CS-121.

**CS-140 Operating Systems I [C]****4 credits, Fall**

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-140D Operating Systems I: Command Line [C]****3 credits, Winter**

In-depth study of the Windows command line environment and related syntax. Complete problem-solving exercises using the command line environment with an emphasis on batch files. Command line networking is introduced. Also offered as an online course. Prerequisites: Pass CS-140; pass MTH-065 or placement in MTH-095.

**CS-140U Operating Systems I: Linux/UNIX [C]****3 credits, Fall**

Computer operating systems concepts using Linux/UNIX. General operating system concepts, file management, network utilities, text editing, shell environment configuration, Linux installation. Also offered as an online course. Prerequisite: Pass CS-140.

**CS-160 Computer Technician Orientation [C]****2 credits, Fall**

Introduction to computing topics such as computer architecture, data representation, problem solving, programming, and networking. Also covers careers and certifications in Information Technology. Prerequisites: Pass CS-120 or placement in CS-121; pass WR-095 or placement in WR-121; pass MTH-065 or placement in MTH-095.

**CS-161 Computer Science I [C]****4 credits, Fall**

Disciplined approach to algorithm development, problem-solving methods, program design, data types, control structures, 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 [C]****4 credits, Winter**

Effective methods of designing large programs. Elementary and dynamic data structures, data abstraction, object oriented programming, program correctness, verification, testing. Requires a substantial project. Prerequisite: Pass CS-161.

**CS-178 Introduction to the Internet/World Wide Web [C]****3 credits, Fall/Winter/Spring/Summer**

Distance Learning: Online. Introductory course on the use and history of the Internet. Explore the philosophy of the Internet, use tools for research, communication, and entertainment. Develop and publish a simple web page. Recommended: Pass CS-091 or placement in CS-120.

**CS-179 Data Communications Concepts [C]****3 credits, Winter**

Overview of the basic concepts in computer telecommunications. Hardware, software, connectivity, and protocols involved including local area networks, wide area networks, Internet, and the convergence of computer, telephone, TV, and cable technologies. Also offered as an online course. Prerequisites: Pass CS-120 or placement in CS-121; pass MTH-065 or placement in MTH-095; pass WR-095 or placement in WR-121.

**CS-195 Multimedia for the Web [C]****3 credits, Winter**

Working with and exploring emerging multimedia technologies on the web today. Emphasis on interactive multimedia created with Macromedia Flash, also includes capturing multimedia elements through scanning, stylus and tablet, digital photography, and digital video recording. Also offered as an online course. Prerequisite: Pass CS-125H.

**CS-225 Computer End User Support [C]**  
3 credits, Fall

Addresses professional and interpersonal skills needed by technicians who support and manage hardware and software information systems. Customer service, troubleshooting, help desk operation; product needs analysis, evaluation, purchases and installation; technical documentation and training skills. Also offered as an online course. Prerequisites: Pass CS-120 or placement in CS-121; pass WR-095 or placement in WR-121.

**CS-226 Applications Support [C]**  
3 credits, Spring

Troubleshooting Microsoft Office applications to enhance student understanding of typical problems and problem solving processes. Functions and features of installing, configuring, and maintaining Microsoft Office 2003 on the Windows XP operating system. Prerequisite: Pass CS-121 and pass CS-140.

**CS-227 PC Hardware & Repair I [C]**  
4 credits, Winter

Basic operational concepts, identification, installation, and configuration of microprocessors, memory, mother-boards, power supplies, floppy and hard disks, video monitors, graphics cards, serial and parallel cards, modems, printers. System teardown and inspection, hardware and software service documentation. Prerequisites: Pass CS-140; pass MTH-065 or placement in MTH-095.

**CS-228 PC Hardware & Repair II [C]**  
4 credits, Spring

Continuation of CS-227. Emphasizes the use of diagnostic software tools and troubleshooting advanced problems. Technical topics on sound cards, CD-ROM, hard drives, data recovery, SCSI, and other topics. Includes building, maintaining, and upgrading a PC. Prerequisite: Pass CS-227.

**CS-229 Network System Repair & Troubleshooting [C]**  
4 credits, Fall

Continuation of CS-228. Hands-on training in building and servicing PC LANs and WANs. Includes network servers, hubs, routers, wiring closets, cabling, and other topics for peer-to-peer and client-server LANs, WANs, and the Internet. Prerequisite: Pass CS-228.

**CS-233S Web Application Development II [C]**  
3 credits, Winter

Exploration of server-side programming with emphasis on database-driven web site design. Uses ASP.NET to revisit general object-oriented programming constructs, create database connectivity, and create highly interactive web sites. Application of XML concepts and database techniques are discussed. Prerequisites: Pass CS-133S; or pass CS-125H & pass CS-133VB; or pass CS-125H & pass CS-161.

**CS-233VB Visual Basic.NET II [C]**  
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-234S Web Application Development III [C]**  
3 credits, Spring

Use PHP and MySQL to develop dynamic Web sites for use on the Internet or Intranet. Develop web sites from simple online order forms to complex e-commerce sites. Web database building, connectivity, maintenance, and security. Prerequisites: Pass CS-133S; or pass CS-125H & pass CS-133VB; or pass CS-125H & pass CS-161.

**CS-240U Operating Systems II: Linux/UNIX [C]**  
3 credits, Winter

Hands-on system administration of Linux/UNIX. Installation, system configuration, user and group account management, disk formatting and partitioning, local file systems, system startup and shutdown, run levels, backup and restore, printers and printing, basic local area networking, memory management. Prerequisite: Pass CS-140U.

**CS-240W Operating Systems II: Windows [C]**  
3 credits, Winter

An introduction to the current Windows client operating system. Includes installation, disks and file systems, profiles and policies, security, internetworking, remote access, printing and troubleshooting. Prerequisite: Pass CS-140.

**CS-260 Data Structures [C]**  
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 [C]**  
3 credits, Winter

Focuses on design of a relational database management system (RDMS). Database theory, entity-relationships, referential integrity, use of SQL for data manipulation, and database security. Uses MS Access, MS SQL Server, MySQL and Oracle. Prerequisite: Pass CS-135DB.

**CS-279N LAN I: Novell Administration [C]**  
4 credits, Winter

Hands-on, in-depth look at Novell software with an emphasis on system administration. Topology, protocols, cable types. Design, configuration, security issues, performance issues, troubleshooting of the Novell network operating system. Prerequisites: Pass CS-140 & pass CS-179.

**CS-279W LAN I: Windows Server [C]**  
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 & pass CS-240W.

**CS-280 Computer Science/CWE**  
3-6 credits**Fall/Winter/Spring/Summer**

Cooperative work experience. Provides a supervised work experience to supplement the school experience from the academic classroom environment. User support, work with computer applications or programming languages, install or manage PC computer systems, and website development. Required: Instructor consent & a CWE seminar. Prerequisites: Pass CS-121, pass CS-140 & pass CS-160.

**CS-284 Network Security [C]**  
3 credits, Spring

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-287X Microsoft Exchange Server [C]**  
2 credits, Winter

Introduction to installation, administration, and troubleshooting Exchange Server. Topics include Internet mail protocols, Exchange Server architecture, installation, management, and security. Prerequisite: Pass CS-279W or network administration experience.

**CS-288W LAN II: TCP/IP [C]**  
4 credits, Fall

Issues involved with interconnecting multiple LANs to form an internetwork using Windows. Emphasis on TCP/IP protocols including DHCP, DNS, ARP, IPsec and routing protocols. Also covered are connections to the Internet, web servers, and security issues. Hands-on experience with hardware and software. Prerequisite: Pass CS-279W.

**CS-289A Web Server Administration: Apache Web Server [C]**  
2 credits, Spring

Introduction to Apache Web Server. Covers installing, administering, securing, and troubleshooting Apache Web Server running on Linux. Additional topics include http, https, ftp protocols, and FrontPage extensions. Prerequisite: Pass CS-240U.

**CS-289I Web Server Administration: Internet Information Server [C]**  
2 credits, Winter

An introduction to Microsoft Internet Information Server (IIS) running on Windows Server. Covers installation, administration, security, and troubleshooting IIS. Additional topics include http, https, ftp protocols, and FrontPage extensions. Prerequisite: Pass CS-240W or network administration experience.

**CS-295 Website Technologies [C]**  
3 credits, Spring

Continuation of CS-195, culminating in a portfolio. Students submit a project proposal to be admitted. Project involves web design, client-side, and/or server-side applications, demonstration of digital imaging, streaming media, multimedia concepts. Prerequisite: Pass CS-195 and CS-133S; or pass CS-195 and CS-135I.

**CW**

Courses with this prefix will not transfer with credit to a four-year institution.

**Computer Science Workshops & Short Courses**

**CW-050 Introduction to Windows**  
0 credit, Fall/Winter/Spring/Summer  
A nuts-and-bolts workshop for those who have little or no experience with computers. It (or equivalent experience) serves as a prerequisite for most other workshops.

**CW-052 Electronic Spreadsheets**  
0 credit, Fall/Winter/Spring/Summer  
Includes Levels I, II and III of MS-Excel 2003.

**CW-053 Web Design**  
0 credit, not offered every term  
Workshops offered include Levels I & II of FrontPage 2003.

**CW-054 Word Processing**  
0 credit, Fall/Winter/Spring  
Workshops include Levels I, II, and III of MS-Word 2003.

**CW-055 Software Applications**  
0 credit, not offered every term.  
Workshops include Levels I, II, and III of MS-Powerpoint 2003.

**CW-056 Database Applications**  
0 credit, Fall/Winter/Spring/Summer  
Workshops offered include Levels I, II, and III of MS-Access 2003.

**CWE**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

**Cooperative Work Experience**

**CWE-010 Pre-Cooperative Work Experience**  
2-6 credits  
Fall/Winter/Spring/Summer  
For students who are undecided on a major. Opportunity for career exploration.

**CWE-281 Cooperative Work Experience Seminar I**  
0 credit, Fall/Winter/Spring/Summer  
Prepares students for career success. Uses on-the-job learning experience and case studies to stimulate decision making and discussion. Corequisite for program specific CWE courses.

**CWE-282 Cooperative Work Experience Seminar II**  
0 credit, Fall/Winter/Spring/Summer  
Emphasis on job-related situations and experiences. Case problems introduced to stimulate decision making and discussion. Special projects. Prerequisite: CWE-281. Corequisite for program specific CWE courses.

**CWE-283 Cooperative Work Experience Seminar III**  
0 credit, Fall/Winter/Spring/Summer  
Includes organizing and presenting a career related project to the seminar group. 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.

- Professional/Technical Cooperative Work Experience Classes:**
- Accounting ..... BA-280
  - Accounting Clerk ..... BA-280
  - Auto Mechanics ..... AM-280/281
  - Business Technology ..... BA-280
  - Building Construction ..... BC-180/280
  - Collision Repair ..... AB-280
  - Collision Repair Refinishing .. ABR-180
  - Computer Science ..... CS-280
  - Criminal Justice ..... CJA-280/281
  - Corrections, Juvenile Corrections
  - Drafting ..... CDT-280
  - Early Childhood Education ... ECE-280
  - Electronic & Microelectronics . SM-280
  - Employment Skills Training.... EST-180
  - Environmental Education ..... ED-280
  - Fire Science/Wildland ..... FRP-180/280
  - Geographic Information ..... GIS-280
  - Systems
  - Gerontology ..... HS-280
  - Health ..... HE-280
  - Horticulture ..... HOR-280/281/282
  - Human Services Generalist ..... HS-280
  - Manufacturing ..... MFG-280
  - Marketing ..... BA-280
  - Office Assistant ..... BA-280

Occupational Skills Training .. OST-180  
 Tutor ..... ED-280  
 Welding ..... WLD-280

**Transfer Program Cooperative Work Experience Classes:**

Anthropology ..... ANT-280  
 Art ..... ART-280  
 Business Administration ..... BA-280  
 Biology ..... BI-280  
 Criminal Justice ..... CJA-280/281 /Corrections  
 Education ..... ED-280  
 English ..... ENG-280  
 Geology ..... G-280  
 Geography ..... GEO-280  
 Health ..... HE-280  
 History ..... HST-280  
 Journalism/Public Relations ..... J-280  
 Mathematics ..... MTH-280  
 Music ..... MUS-280  
 Physical Education ..... PE-280  
 Physics ..... PH-280  
 Political Science ..... PS-280  
 Psychology ..... PSY-280  
 Religion ..... R-280  
 Sociology ..... SOC-280  
 Speech ..... SP-280  
 Spanish ..... SPN-280  
 Theatre Arts ..... TA-280

**DA**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional 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, legal aspects, basic physics, biological effects, x-ray equipment and infection control. Includes practical instruction in radiation health and safety, types of film and holders, processing/mounting. Required: Instructor consent.

**DA-102 Dental Radiology II/Lab**  
**1 credit, Winter**

Prepare and review for the Dental Assisting National Board and State of Oregon Radiological Proficiency Board examination. Criteria for perfecting full mouth series x-rays. Advanced principles of radiology techniques. 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. Includes lectures and discussion of the dental professional, dental law, ethics and patient records. 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. Review all dental procedures. Introduction to bleaching material and fabrication of trays. 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. Includes manipulation, storage and disposal of hazardous dental materials. Amalgam and composite procedures are taught and practiced in a laboratory setting. Preclinical instruction in amalgam polishing is introduced. Required: Instructor consent.

**DA-108 Dental Materials II**  
**2 credits, Winter**

Introduction to properties, uses and manipulation of impression materials, gypsum products and waxes. Includes instrumentation and procedures for fixed and removable prosthodontics, and provisional restorations. 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 class. Students 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 8 supervised unpaid hours per week is required for term one practicum. 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 both clinical procedures and radiology. Covers advanced EFDA skills. Implement infection control protocols. Basic business office procedures will be introduced. Ten hours of community service will be required. 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 and hazard control. Covers OSHA standards of Hazard Communication and Bloodborne Pathogens, management of Material Safety Data Sheets and labeling hazardous materials. Prepare for Infection Control Exam. Required: Instructor consent.

**DA-130 Clinical Practicum III**  
8 credits, Spring

Supervised unpaid practice and improvement of advanced clinical skills in all areas of chairside dental assisting, laboratory procedures, specialties and radiology. Advanced business office procedures will also be covered. Students will be responsible to meet ten hours of community service. 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.

**EC*****Economics*****EC-115 Introduction to Basic Economics**  
4 credits, not offered every year

Surveys principles of economics, government and institutional economics and related policies, and international issues. Includes economic history, the concepts of supply and demand and opportunity costs. Recommended: 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. Note: Certain sections of EC-201 are offered as a telecourse. Recommended: Placement in RD-115.

**EC-202 Principles of Economics: MACRO**  
4 credits, Fall/Winter/Spring

Introduction to economic theory, policy, and institutions. Focuses on macro-economic theory, scarcity, production, money, unemployment, inflation, and international finance. Note: Certain sections of EC-202 are offered as a telecourse. Recommended: Placement in RD-115.

**EC-215 American Economic History**  
4 credits, not offered every year

Studies the historical development of economic institutions in the United States. Includes industry, agriculture, transportation, labor and financial institutions. Recommended: Placement in RD-115.

**EC-216 Introduction to Labor Economics**  
4 credits, not offered every year

Introduces the theory and policy of labor power economics. Explores the history of workers in America as they have been affected by political transitions, labor organizations and conflict with management. Recommended: Placement in RD-115.

**EC-230 International Economics**  
4 credits, not offered every year

An exploration of international trade and finance from the era of mercantilism to contemporary times. Global issues using historic events, theoretical explanations and the methodology of economics. Recommended: Placement in RD-115.

**ECE**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

***Early Childhood Education*****ECE-150 Introduction & Observation in Early Childhood Education**  
3 credits, Fall

Focuses on the history of early childhood education, the value and use of objective observations as a teaching tool, how to plan and adapt your program's goals/objectives for each individual child/family. Includes systematic, weekly observations of children.

**ECE-154 Children's Language & Literacy**  
3 credits, Winter

An overview of children's literature including availability, purpose, ways to improve its use, and appropriateness in school situations. Children's books will be read and evaluated in story groups.

**ECE-175 Infant/Toddler Caregiving**  
1 credit, Summer

Presents skills and knowledge to manage quality care in group settings. Four modules: 1. Learning & Development; 2. Group Care; 3. Social Emotional Growth; 4. Family & Provider Relationships.

**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-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

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/care giver while working with young children in an organized setting, observation/assessment and curriculum development. Must have completed a minimum of 9-12 credits in ECE and Family Studies.

**ED*****Education***

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

**ED-100 Introduction to Education**  
**3 credits, Fall/Winter/Spring/Summer**

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, Winter**

Introduces the nature of the reading process and presents a systematic approach to language arts instruction. Students learn to link literacy instruction and assessment to state content standards.

**ED-114 Instructional Strategies in Math and 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-120 Leadership Development I**  
**3 credits, Fall, not offered every year**

First of a three term sequence designed to develop leadership skills. Explores classical and modern theories with practical applications. Develop a personal leadership philosophy; conceive and articulate a vision, lead with goals; use logic and creativity in decision making. May be taken in any sequence. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121

**ED-121 Leadership Development II**  
**3 credits, Winter, not offered every year**

Second of a three term sequence designed to develop leadership skills. Explores classical and modern theories with practical applications. Continuing development of a personal leadership philosophy; time management; conducting effective meetings; empowering and delegating. May be taken in any sequence. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ED-122 Leadership Development III**  
**3 credits, Spring, not offered every year**

Third of a three-term sequence designed to develop leadership skills. Explores classical and modern theories with practical applications. Finalizing a personal leadership philosophy; initiating change; managing conflict; leadership ethics; servant leadership. May be taken in any sequence. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ED-125 Tutor Certification I**  
**1 credit, not offered every term**

Covers the philosophy and ethics, tutor responsibilities, guidelines, do's and don'ts, time management, communication skills, critical thinking., Socratic Method, active listening and paraphrasing, and study skills. Required: Program Coordinator Consent.

**ED-126 Tutor Certification II**  
**1 credit, not offered every term**

Covers characteristics of adult learners, learning styles, cultural awareness, intercultural communications, and tutoring specific subjects. Required: Program coordinator consent.

**ED-127 Tutor Certification III**  
**1 credit, not offered every term**

Covers assertiveness training, tutoring target populations, supervisory and group management skills. Required: Program coordinator consent.

**ED-130 Comprehensive Classroom Management**  
**3 credits, Spring**

Distance Learning: Online. 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**

Distance Learning: Online. This introductory course for educators 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-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**

This course 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-210 Electronic Portfolio**  
**1 credit, not offered every term**

Focuses on professional portfolio development to document educational experience and expertise. Opportunity to develop a professional portfolio. Includes portfolio demonstrations.

**ED-229 Learning and Development**

3 credits, Fall/Winter/Spring/Summer  
This course addresses current theory regarding human development, intelligence, motivation, and the learning process. Students learn to apply strategies and techniques derived from these theories. (formerly Psychology of Learning)

**ED-235 Educational Technology**

3 credits, Summer  
This course 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-254 Instructional Strategies for English Language Learners**

3 credits, Spring  
This course will examine pedagogical and cultural approaches which lead to successful acquisition of English language skills and content knowledge.

**ED-258 Multicultural Education**

3 credits, Fall/Winter/Spring/Summer  
This course 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-268 Educating Mild/Severely Disabled**

3 credits, not offered every term  
Introduces theory and technique for working with handicapped students. Addresses services and funding provided for mildly and severely handicapped students. Required: Program coordinator consent.

**ED-270 Practicum I**

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. Seminars cover classroom experience, problem solving techniques, and materials. Prerequisites: ECE-280 or ED-280.

**ED-271 Practicum II**

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. Seminars cover classroom experience, problem solving techniques, and materials. Prerequisites: ECE-280 or ED-280, and ED-270.

**ED-272 Practicum III**

4 credits, Spring  
This course provides an educational field experience in a classroom setting for students pursuing careers in education. Prerequisites: ECE-280 or ED-280, and ED-270, ED-271.

**ED-280 Practicum/CWE (Education)**

2-6V credits  
Fall/Winter/Spring/Summer  
Supervised practicum in a school setting. Students will utilize and develop knowledge, skills and attitudes relevant to working in a school and with children. Prerequisite or co-requisite: ED-100.

**EE****Electrical Engineering****EE-221 Electrical Circuit Analysis**

5 credits, Spring  
Experimental laws, network theorems, and useful computer analysis techniques of electrical circuit analysis. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-252.

**EET**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

**Electronics Systems Technology**

Courses listed with the EET prefix are the main core classes for the Electronics Systems Technology program. 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 ext. 3523.

**EET-112 Electronic Test Equipment & Soldering**

1 credit, 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 and MTH-065.

**EET-137 DC Circuits**

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. Prerequisite: MTH-050

**EET-139 Principles of Troubleshooting I**

2 credits, Fall  
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. Includes a computer applications laboratory. Recommended: MFG-109 or MFG-209.

**EET-141 Transient Analysis and Network Theorems**  
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 AC Circuits**  
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: EET-137, MTH-050.

**EET-215 Principles and Applications of Manufacturing Equipment Technology**  
2 credits, Fall

This course emphasizes applied electro-mechanical principles and motors. Covers theory, operation and application of force, work, rate, resistance, energy power and force transformers. AC and DC motors also covered. Prerequisite or co-requisite: EET-137.

**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: 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: EET-127.

**EET-252 Control Systems**  
3 credits, Winter

Covers basic control system and sub-systems used in the electronics industry covering programmable controllers, sensors, transducers, motion and motor control systems. Recommended: EET-157, EET-127.

**EET-254 Introduction to Microcontrollers**  
4 credits, Winter

Introduction to process 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: 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-111 College Study Skills**  
3 credits, Fall/Winter/Spring

Emphasizes time management, listening/notetaking, testing skills/anxiety, library resources, learning styles, study/reading textbooks, concentration. Prerequisite: Placement in RD-090.

**EMT**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional 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: introduction to EMS, airway management, and patient assessment. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121, and placement in MTH-065. Prerequisite: AHA CPR Health Care 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-106 Emergency Communication & Patient Transportation**  
3 credits, Spring

Covers EMS operational areas including: Emergency communications and radio use techniques, ambulance operation, maintenance, laws and safety, emergency response and driving techniques, route planning, communications systems, and more. Prerequisite: Pass EMT-101.

**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-114 NREMT – Basic Recertification**  
5 credits, Winter

Designed for the EMT student who needs to re-register with the NREMT, may have allowed certification to lapse, or needs additional instruction in order to pass the certification test. Prerequisite: Current certification as an EMT or pass EMT-101.

**EMT-116 Oregon EMT Intermediate Part I**  
5 credits, Fall

Theory and practice of the EMT Intermediate in the state of Oregon. Focus on: airway management, IV therapy, pharmacology, drug calculations. Successful completion required to sit for state certification examination. Prerequisites: Current Oregon EMT-Basic certification and EMS agency affiliation.

**EMT-117 Oregon EMT Intermediate Part II**  
5 credits, Winter

Continuation of EMT-116. Focus on: cardiac and other medical emergencies, and trauma management. Prerequisite: Pass EMT-116.

**EMT-214 NREMT – Paramedic Recertification**  
3 credits, Winter

Provides recertification requirements for EMT-Paramedics registered with NREMT. This course also fulfills the requirements for Oregon paramedic recertification. Prerequisite: Current or expired EMT-P certification, or successfully completed a Paramedic course.

**EMT-230 EMT Advanced Skills Integration**  
3 credits, Spring/Summer

Enhances the knowledge of all basic level pre-hospital care providers and improves understanding of ALS procedures. Designed for the EMT who assists advanced providers in pre-hospital care, is interested in working for an EMS agency, or wants a prep class before beginning an EMT-I or EMT-P program. Additional clinical hours with EMS agency required. Prerequisite: Current certification as an EMT or pass EMT-102.

**ENG****English****ENG-104 Introduction to Literature: Fiction**

4 credits, Fall/Winter/Spring/Summer  
Introduction to American and international short fiction. Note: Certain sections of ENG-104 are offered online. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-105 Introduction to Literature: Drama**

4 credits, Fall/Winter/Spring/Summer  
Introduction to American and international drama. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-106 Introduction to Literature: Poetry**

4 credits, Fall/Winter/Spring/Summer  
Introduction to American and international poetry. Note: Certain sections of ENG-106 are offered online. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-107 World Literature**  
4 credits, Fall

The Ancient World: epic, lyric, and dramatic literature with emphasis on Greek, Roman, Egyptian, Hindu, and Hebrew works. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-108 World Literature**  
4 credits, Winter

The Dark Ages through the Enlightenment, emphasizing Cervantes, Dante, and Voltaire. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-109 World Literature**  
4 credits, Spring

The Romantics through modern times, ranging from Russia to Nigeria and Colombia. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-121 Mystery Fiction**  
4 credits, not offered every year

Detective fiction: mystery novels and short stories. Analysis of the different styles and fictional techniques of such writers as Poe, Doyle, Christie, Stout, Marsh, Lathen, Sayers, and Chandler. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-125 Oregon Literature**  
4 credits, not offered every year

Representative study of Oregon writers in fiction, poetry, and the ballad. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-195 American Film**  
4 credits, not offered every term

Focus on the history and theory of American film making from 1895 to the present. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-201 Shakespeare**  
4 credits, Fall

Study of significant plays and sonnets. Selected comedies, histories and tragedies covered each term. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-202 Shakespeare**  
4 credits, Winter

Study of significant plays and sonnets. Selected comedies, histories, and tragedies covered each term. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-203 Shakespeare**  
4 credits, Spring

Study of significant plays and sonnets. Selected comedies, histories, and tragedies covered each term. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-204 Survey of English Literature**  
4 credits, Spring

Fourth to 17th century. Includes early legends, myths, the works of Chaucer and Shakespeare, and 17th century poems and essays. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-205 Survey of English Literature**  
4 credits, Fall

17th to 20th century. Includes English epic, satire, poetry, and essay; works by Milton, Blake, Swift, and others. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-206 Survey of English Literature**  
4 credits, Winter

Focus on selected authors and works of modern British fiction, poetry, nonfiction, and drama. Recommended: Placement in RD-115; or pass WR-095 or placement in WR-121.

**ENG-210 Modern American Indian Literature**

4 credits, not offered every year

Emphasizes contemporary fiction and poetry, including works of James Welch, Leslie Silko, and Scott Momaday. Recommended: 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: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-215 Literature of the Beat Generation**

4 credits, not offered every year

Introduction to the Literature of the Beat Generation, from 1956 to present. Examines representative works and biographical profiles of the primary figures of the movement. Explores historical and cultural roots and legacies of these writers. Note: Certain sections of ENG-215 are offered online. Recommended: 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 the literature and other art they have inspired. Note: Certain sections of ENG-216 are offered online. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-218 Arthurian Legends**  
4 credits, Winter

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: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-225 Creative Nonfiction Literature**  
4 credits, Winter

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: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-250 Mythology**  
4 credits, Fall

Fundamental myths of Western culture, such as Greek, Roman, and Judeo-Christian. Comparative analysis of the themes and structures of myths of several cultures and study of influence on the cultures that followed. Insight into the social, psychological, and aesthetic nature of mythology. Introduction to the theoretical approaches to understanding mythology. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-251 Mythology**  
4 credits, Winter

Continuing study of European myths, including Celtic and/or Norse. Comparative analysis of the themes and structures of myths of several cultures and study of their influence on the cultures that followed. Insight into the social, psychological and aesthetic nature of mythology. Introduction to the theoretical approaches to understanding mythology. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-252 Mythology**  
4 credits, Spring

Study of non-European mythologies such as East Indian and/or Native American. Comparative analysis of the themes and structures of myths of several cultures and study of their influence on the cultures that followed. Introduction to the theoretical approaches to understanding mythology. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-253 American Literature**  
4 credits, Fall

Pre-Colonial to 19th century. Surveys the development of American fiction, non-fiction, poetry, and drama through the study of the works of both major and lesser known writers. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-254 American Literature**  
4 credits, Winter

Mid-19th century to 20th 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: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-255 American Literature**  
4 credits, Spring

Focus on selected authors and works of modern American fiction, poetry, non-fiction, and drama. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-260 Introduction to Women Writers**  
4 credits, not offered every year

Study of women writers and women's roles in plays, poems, and fiction. Recommended: 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. Writers such as Crane, Remarque, Trumbo, Heller, Vonnegut, Owen, Sassoon, and writers of the Vietnam War will be examined and discussed. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**ENG-275 The Bible As Literature**  
4 credits, not offered every year

Historical and literary approach to the Hebrew Bible, Apocrypha, and New Testament. Note: Certain sections of ENG-275 are offered online. Recommended: 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.

**ENL**

Courses with this prefix may transfer with credit to a four-year institution. Courses are intended for PIE students.

## *English as a Non-Native Language*

### **ENL-117 Advanced Grammar A** 3 credits, Fall/Spring

Part A of a 2 part series. Presentation and practice of adverbial clauses, discourse connectors, direct and indirect speech, and noun clauses in written and spoken English. Required: Instructor consent. Corequisite: PIE-070.

### **ENL-118 Advanced Grammar B** 3 credits, Winter/Summer

Part B of a 2-part series. Presentation and practice of 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, Fall/Winter/Spring/Summer

Advanced level ESL students will practice academic reading, writing, and editing skills. 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 with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

## *Energy & Resource Management*

### **ERM-100 Orientation to Energy & Resource Management [C]** 3 credits, Fall

Overview of the energy, utility, and resource industries' career options. Through field trips, guest speakers, and research, students will discover and report on career options in the energy and resource industries.

### **ERM-101 Energy & Resource Technology I [C]** 3 credits, Fall

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.

### **ERM-102 Energy & Resource Technology II: Electricity [C]** 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.

### **ERM-103 Energy & Resource Technology III: Fossil Fuels [C]** 3 credits, Spring

Examine the origin and characteristics of fossil fuel and industry fundamentals in the Northwest. Research and report on strategies and components for utilizing fossil fuel.

### **ERM-107 Career Portfolio [C]** 3 credits, Fall/Spring

Develop and organize a portfolio to record knowledge and learning related to the energy and utility resource industries. Portfolio consists of resume, reference letters, work and learning samples, and network contacts.

### **ERM-108 Career Marketing Strategies [C]** 3 credits, Winter

Expand and perfect portfolio as a job-marketing tool to demonstrate knowledge, skills and abilities in the areas of: energy and resource management, computer literacy, and leadership. Plan internship and practice interviewing techniques.

### **ERM-170 Energy Industry Performance, Health & Safety I** 1-12 credits

Fall/Winter/Spring/Summer

Discover and develop industry-approved general behavior regarding the conduct and application of health, safety and performance issues. Course and fieldwork include acquiring and applying industry knowledge, skills, and practices to current and future work conditions.

### **ERM-180 Energy & Resource Management/CWE** 3-6 credits

Fall/Winter/Spring/Summer

Practical work experience in, and exploration of, an energy or resource company under the supervision of the instructor and employer. Required: instructor consent & CWE seminar or completion of ERM-107.

### **ERM-201 Energy Applications I: Renewable Energy Resources [C]** 6 credits, Fall

Access and interpret building performance, conversion technologies and the applications of renewable energy resources.

### **ERM-202 Energy Applications II: Leadership [C]** 6 credits, Winter

Observe the concepts of leadership and management for energy generation and distribution. Develop strategies to expand application and resources.

### **ERM-203 Energy Applications III: Seminar [C]** 6 credits, Spring

Energy seminar. Research and report on current developments of energy applications.

### **ERM-211 Energy Industry Organizational Development [C]** 1-12 credits

Fall/Winter/Spring/Summer

Discover principles and concepts that govern organizational development in the utility industry. Focus on organizational development and team concepts.

**ERM-212 Energy Industry Leadership Development**  
1-12 credits

Fall/Winter/Spring/Summer

Discover principles and concepts that govern leadership development in energy and resource management industries. Focus on leadership and personal development.

**ERM-214 Energy Industry Communication Management**  
1-12 credits

Fall/Winter/Spring/Summer

Discover principles and concepts to advance personal communication methods in the energy and resource management industries. Focus is on communication and personal development.

**ERM-270 Energy Industry Performance, Health & Safety III**  
1-12 credits

Fall/Winter/Spring/Summer

In a leadership role, participate in industry-approved behavior regarding the conduct and application of specific health, safety and performance issues. Course and field work include applying and advancing industry knowledge, skills, and practices.

**ERM-280 Focused Energy & Resource Management/CWE**  
3-6 credits

Fall/Winter/Spring/Summer

Targeted on-the-job field experience in an energy or utility company related to the student's focused area of study. Supervised by the instructor and employer. Required: Instructor consent & CWE seminar or ERM-108.

**ERM-284 Intro to Energy & Resource Management Applications**  
1-12 credits

Fall/Winter/Spring/Summer

Introduction to areas of interest within the energy and utility industry: electric, gas, telecommunications, water, or other alternative energy. Explore and/or experience several industry applications, document experience, and complete an agreed-upon research project.

**ERM-285 Intermediate Energy & Resource Management Applications**  
1-12 credits

Fall/Winter/Spring/Summer

Identify, select, and explore an area of interest within the energy and utility industry: electric, gas, telecommunications, water, or other alternative energy. Complete an agreed-upon research project and document experience.

**ERM-286 Advanced Energy & Resource Management Applications**  
1-12 credits

Fall/Winter/Spring/Summer

Focused application in the student's area of interest within the energy and resource industry: electric, gas, telecommunications, water or other alternative energy. Students work with an industry mentor to research/complete an agreed-upon project.

**ESH**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

***Environmental Safety & Health*****ESH-100 Environmental Regulations**  
1-3 credits

Fall/Winter/Spring/Summer

Distance Learning: Online. This course is 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. For more info visit <http://depts.clackamas.cc.or.us/esh/>

**ESH-101 Hazardous Waste Management**  
2 credits, Fall/Winter/Spring/Summer  
Distance Learning: Online. DEQ authorized class. This class offers ways to reduce, identify, store, and dispose of hazardous waste in Oregon. Certificate of completion from CCC/DEQ. For more information visit <http://depts.clackamas.cc.or.us/esh/>

**ESH-103 Hazardous Waste Operations and Emergency Response**  
2-4 credits, not offered every term

The standard covers workers in cleanup operations at uncontrolled hazardous waste sites and at EPA-licensed facilities; as well as workers responding to emergencies involving hazardous materials (e.g. spills)

**ESL**

Courses with this prefix will not transfer with credit to a four-year institution. Courses are intended for ESL students.

***English as a Second Language*****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 campus. Tutors help to set student goals and a plan of learning. Required: Instructor consent.

**ESL-018 Assess/Evaluate for New Students**

0 credit, Fall/Winter/Spring/Summer

New students in the adult ESL program receive information about classes offered, departmental and college policies, college services available, campus facilities, student responsibilities, and community resources. Required: Instructor consent.

**ESL-019 Educational Planning for Returning Students**

0 credit, Fall/Winter/Spring/Summer

For returning students in the adult ESL program at CCC. Students meet with their instructors to review progress, revisit goals, and learn how to transition to other educational and training opportunities. Required: Instructor consent.

**ESL-020 Life Skills 1**

0 credit, not offered every year

Introduces the language necessary to function in day-to-day American society at the beginning level; listening, speaking, grammar, reading, and writing in the contexts of work, family, and community. Required: Instructor consent.

**ESL-021 Life Skills 2**

0 credit, not offered every year

Introduces the language necessary to function in day-to-day American society at the upper beginning level; listening, speaking, grammar, reading, and writing in the contexts of work, family, and community. Required: Instructor consent.

**ESL-022 Life Skills 1 & 2**

0 credit, Fall/Winter/Spring/Summer

Introduces the language necessary to function in day-to-day American society at the beginning levels; listening, speaking, grammar, reading, and writing in the contexts of work, family, and community. Required: Instructor consent.

**ESL-032 Low Intermediate Conversation**

0 credit, not offered every year

Low intermediate level students learn and practice speaking and listening to improve their fluency in English for living and working situations. Required: Instructor consent.

**ESL-033 Intermediate Conversation**

0 credit, Fall/Winter/Spring/Summer

Intermediate level students learn 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

High-intermediate level students learn and practice speaking and listening to improve their fluency in English for living and working situations. Required: Instructor consent.

**ESL-035 Advanced Communication Skills**

0 credit, 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.

**ESL-036 Communicating with Customers**

0 credit, not offered every term

For upper-intermediate and advanced level non-native speakers of English who desire employment in retail and/or customer service. Teaches the basics of customer service. Students practice customer service skills. Required: Instructor consent

**ESL-040 Beginning Grammar**

0 credit, Fall/Winter/Spring/Summer

Presentation and practice of the verb "to be," simple present verb tense, 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

Presentation and practice of simple present and simple past, present and past continuous, adverbs of frequency, and nouns in written and spoken English. Required: Instructor consent.

**ESL-042 Intermediate Grammar A**

0 credit, Fall/Spring

Part A of a 2-part series. Presentation and practice of past tense, used to, future/be going to, comparative and superlative adjectives, and question forms in written and spoken English. Required: Instructor consent.

**ESL-043 Intermediate Grammar B**

0 credit, Winter/Summer

Part B of a 2-part series. Presentation and practice of present perfect with time expressions, review of present perfect continuous, introduction to past continuous, and modals of possibility, necessity and advice in written and spoken English. Required: Instructor consent.

**ESL-044 Upper Intermediate Grammar A**

0 credit, Fall/Spring

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, and infinitives. Required: Instructor consent.

**ESL-045 Advanced Grammar A**

0 credit, Fall/Spring

Part A of a 2-part series. Presentation and practice of adverbial clauses, discourse connectors, direct and indirect speech, and noun clauses in written and spoken English. Required: Instructor consent. Corequisite: ESL-070.

**ESL-046 Advanced Grammar B**

0 credit, Winter/Summer

Part B of a 2-part series. Presentation and practice of count/noncount nouns, definite/indefinite articles, modals, and conditional sentences in written and spoken English. Required: Instructor consent. Co-requisite: ESL-070.

**ESL-047 Upper Intermediate Grammar B**

0 credit, Winter/Summer

Part B of a 2-part series. Presentation and practice of adjective clauses, phrasal verbs, and passive voice in written and spoken English. Required: Instructor consent.

**ESL-049 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-050 Beginning Reading/Writing**

0 credit, Fall/Winter/Spring/Summer

Students who have limited knowledge of written English will read and write short sentences and read short paragraphs, gain reading and scanning skills to use in everyday life and in the workplace. 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, Fall/Winter/Spring/Summer

This course is 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

Intermediate level students focus on paragraph level writing with emphasis on reading and writing skills as needed for college courses, the workplace, and 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, Fall/Winter/Spring/Summer  
Advanced level students will practice academic reading, writing, and editing skills. 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, Fall/Winter/Spring/Summer  
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, Fall/Winter/Spring/Summer  
For intermediate level ESL students who are ready to begin writing at the paragraph level. Strategies for improving their 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**  
0 credit, not offered every term  
For 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 Introduction to Pronunciation**  
0 credit, not offered every year  
For ESL students who want to sound more natural when speaking English. Focuses on increasing student awareness of the sounds of American English, improving intelligibility, and producing speech more fluently. Required: Instructor consent.

**ESL-062 Introduction to Idioms**  
0 credit, not offered every year  
Introduction to common American idioms and slang in the context of conversation skills. For upper intermediate ESL students. Required: Instructor consent.

**ESL-063 American Idioms/Slang A**  
0 credit, not offered every term  
Part A of a 2-part series of classes. Introduces common American idioms and slang while practicing conversation skills at the upper intermediate level. Required: Instructor consent.

**ESL-064 American Idioms/Slang B**  
0 credit, not offered every term  
Part B of a 2-part series of classes. Introduces common American idioms and slang 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. Outside of class, view Crossroads Café video series, complete workbook exercises. In class, practice listening for specific information, participate in pair, small group, whole class 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. Required: Instructor consent.

**ESL-071 ESL Skills Lab**  
0 credit, Fall/Winter/Spring/Spring  
Students learn how to operate a computer to improve their English language skills by using language learning software. Required: Instructor consent.

**ESL-073 Writing Workshop**  
0 credit, not offered every year  
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-081 Upper Intermediate Reading Skills**  
0 credit, not offered every year  
Upper intermediate level students will practice the reading skills needed to succeed in college and in everyday life. 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.

**ESL-084 Vocabulary Building**  
0 credit, not offered every term.  
Develops upper intermediate to advanced level students' vocabulary range and vocabulary acquisition skills. Required: Instructor consent.

**ESL-088 Skills for College Success**  
0 credit, not offered every year  
For upper intermediate/advanced level ESL students who plan to attend a U.S. college or university. Increase knowledge of the culture/norms of the American classroom, college schedules/catalogs, analyze course materials, improve study/test-taking skills. Required: Instructor consent.

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## ESR

### *Environmental Science*

**ESR-171 Environmental Science**  
4 credits, Fall  
Introduction to environmental science issues, the scientific method, systems and feedback, biogeochemical cycles, human population growth, communities and ecosystems, productivity and energy flow, world food supply, environmental effects of agriculture, and endangered species. Recommended: Pass MTH-060; placement in RD-115; pass WR-095 or placement in WR-121.

**ESR-172 Environmental Science**  
4 credits, Winter  
Introduction to conservation issues, environmental toxicology, energy principles, environmental effects of fossil fuels and nuclear power, alternative energy sources, water conservation and management, water pollution, and treatment, global warming, air pollution and control. Recommended: Pass MTH-060; placement in RD-115; pass WR-095 or placement in WR-121.

**ESR-173 Environmental Science**  
4 credits, Spring

Introduction to indoor air pollution, ozone depletion, environmental economics, urban environments, waste management, environmental effects of mineral development, environmental impact analysis and planning, biological diversity, ecological succession and restoration, and environmental sustainability. Recommended: Pass MTH-060; placement in RD-115; pass WR-095 or placement in WR-121.

**EST**

Courses with this prefixes may not transfer with credit to a four-year institution.

**Employment Skills Training****EST-081 Employment Skills Training Seminar**  
0-3 credits

Fall/ Winter/Spring/Summer

Develop an individualized program of study to provide workplace skills and address work issues related to his/her career goal. Coursework is aimed at enhancing student employability through individualized projects and applications tailored to particular student needs.

**EST-180 Employment Skills Training**  
2-6 credits

Fall/Winter/Spring/Summer

Provide students with a training experience related to his/her career goal. Major emphasis will be given to workplace and job specific skills. Coursework will focus on student career goals through job site training tailored to particular student needs.

**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.

**FN-225 Nutrition**

4 credits, Fall/Winter/Spring/Summer

The role of vitamins, minerals, and other nutrients in the development and maintenance of a healthy body. Examines diets for nutritional adequacy and current nutrition controversies. Also offered as a telecourse.

**FR****French****FR-101 First-Year French**

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: Placement in RD-115; pass WR-095 or placement in WR-121.

**FR-102 First-Year French**

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**

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-111 French Conversation**

3 credits, not offered every year

Designed to offer students a review of first year structures in the context of situations encountered while traveling, i.e. ordering in a restaurant, finding lodging, giving and asking directions, etc. Emphasis is on oral proficiency and preparing for second-year French. Pass FR-103 or instructor consent.

**FR-201 Second-Year French**

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**

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**

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.

**FRP**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional 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-006 Q & A Wildland Firefighting**  
0 credits, Fall/Winter

Provides an overview of wildland firefighting and the requirements to become a wildland Firefighter 2 and includes a look at life on the fire line.

**FRP-130 Intro to Wildland Firefighting**  
3 credits, Fall/Winter/Spring

NWCG S-130 & S-190 certified. Introduces students to wildland fire behavior and the skills necessary to fight wildland fires under close supervision. No prerequisites or firefighting experience required.

**FRP-131 Advanced Firefighter Training**  
1 credit, not offered every term

NWCG S-131 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. Prerequisite: Pass FRP 130 (S-130).

**FRP-180 Wildland Fire/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

On-the-job experience in a wildland firefighting capacity meeting requirements as set forth in the wildland firefighting task book. Prerequisite: FRP-130. Required: Instructor consent & a CWE seminar.

**FRP-200 Basic Incident Command System**  
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. No prerequisites.

**FRP-211 Portable Pumps and Water Use**  
1 credit, not offered every term

NWCG S-211 certified. Practical use of portable pumps and accessories. No prerequisites.

**FRP-212 Wildfire Power Saws**  
1-2 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. No prerequisites.

**FRP-215 Fire Operations in the Urban Interface**  
1-3 credits, Spring

NWCG S-215 certified. Meets the training needs for initial attack incident commanders and company officers confronting wildland fire that threatens life, property and improvements. Prerequisites: Pass FRP-131 (S-131)

**FRP-216 Driving for the Fire Service**  
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. No prerequisites.

**FRP-217 Interagency Helicopter Training**  
2-4 credits, not offered every term

NWCG S-217 certified. Provides basic knowledge and skills required by individuals who will be working with helicopters relative to fire and non-fire: safety, protective equipment, load calculations, landing areas, fueling, Helibase and Helispot Operations. No prerequisites.

**FRP-230 Crew Boss (Single Resource)**  
2 credits, Spring

NWCG S-230 certified. Meets the training needs of a crew boss on a wildland fire incident. Prerequisite: Pass FRP-131 (S-131).

**FRP-231 Engine Boss (Single Resource)**  
1 credit, Spring

NWCG S-231 certified. Develop proficiency in the performance of all duties associated with the single resource engine boss. Prerequisite: Pass FRP 131 (S-131) and FRP 230 (S-230)

**FRP-232 Dozer Boss (Single Resource)**  
1 credit, not offered every term

NWCG S-232 certified. Dozer safety, inspection and qualification requirements. Prerequisite: Pass FRP-131 (S-131).

**FRP-234 Ignition Operations**  
3 credits, not offered every term

NWCG 234 certified. Learn how to conduct a firing operation in a wildland fire or prescribed fire situation: fire behavior, firing techniques, holding and hazards. Prerequisites: FFI status, pass FRP-290 (S-290), and proficiency in map reading and orienteering.

**FRP-239 Division/Group Supervisor**  
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 (Map, Compass, GPS)**  
1-2 credit, Fall/Winter/Spring

Use maps, compass, grid locations, land descriptions, topography, distance, directions, and Global Positioning Systems (GPS). No prerequisites.

**FRP-244 Survivor II (Wilderness)**  
1-3 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. No prerequisites.

**FRP-249 Leadership for Firefighters**  
2 credits, Winter

NWCG L-280 certified. Develop an awareness of the human factors on the fireline, self-assess skills and abilities, and practice problem solving events in small teams. Pass FRP-130 (S-130).

**FRP-259 Task Force/Strike Team Leader**  
1-3 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. Prerequisites: FF1 and Pass FRP-230 (S-230).

**FRP-260 Interagency Incident Management**  
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.

**FRP-270 Basic Air Operations**  
1 credit, Spring

NWCG S-270 certified. A survey of the use of aircraft in fire suppression and how to conduct yourself in and around aircraft. No prerequisites.

**FRP-280 Wildland Fire/Advanced CWE**  
2-6 credits

Fall/Winter/Spring/Summer

On-the-job experience in a wildland firefighting capacity meeting requirements as set forth in the wildland firefighting task book. Prerequisite: Pass FRP 180 & FRP-131. Required: Instructor consent & a CWE seminar.

**FRP-290 Intermediate Wildland Fire Behavior**  
3 credits, Winter

NWCG S-290 certified. Study of weather and environmental factors and how these factors affect wildland fires. Prerequisite: Pass FRP-130 (S-130).

**G****Geology****G-101 General Geology**  
4 credits, Fall

For liberal arts majors. Introduces 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.

**G-102 General Geology**  
4 credits, Winter

For liberal arts majors. Principles in landform development of glacial, coastal, desert, groundwater, systems, rivers and erosional processes. Earth history and environmental issues in geology. Introduction to topographic and geologic maps, structural geology, fossils.

**G-103 General Geology**  
4 credits, Spring

For liberal arts majors. Principles of plate tectonics, earth's internal structure, seismic activity, mountain building, ocean features, earth resources. Introduction to compass work, field techniques, and GPS use.

**G-119 Rocks & Minerals**  
3 credits, not offered every year

Introduction to the processes of rock and mineral formation. Emphasis on the geologic environments that form important ores, minerals, and basic rock types; geologic processes associated with mountain, volcanic, erosional, and sedimentary environments.

**G-124 Natural History/Parks & Monuments**  
3 credits, Winter

Introduction to the natural history and geology of North America's most beautiful scenic areas. The geologic history and diversity of ecological habitats provide insight to the development of North America. Covers parks of geologic, ecological, and historical significance.

**G-145 Geology of Pacific Northwest**  
4 credits, Fall

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-148 Volcanoes & Earthquakes**  
4 credits, Spring

Examines the geological processes that create volcanoes and earthquakes and the hazards associated with them. Examines basic geologic features, monitoring techniques, hazards, prediction methods, and future events, using historic episodes of volcanic eruptions and earthquakes. Required: Two Saturday field trips.

**G-201 General Geology**  
4 credits, Fall

For geology and science majors. Introduces geologic principles and concepts, weathering, soils, earth structure, igneous, sedimentary, metamorphic rocks, volcanic activity, and landforms. Introduction to environmental geology.

**G-202 General Geology**  
4 credits, Winter

For geology and science majors. Principles in landform development of glacial, coastal, desert, groundwater systems; rivers, erosional processes, earth history, fossils, and environmental issues. Introduction to rectangular survey, topographic and geologic maps, structural geology.

**G-203 General Geology**  
4 credits, Spring

For geology and science majors. Principles of plate tectonics, earth's internal structure, seismic activity, mountain building, oceanography, earth resources. Introduction to Brunton compass work, field mapping techniques, GPS applications and use.

**G-280 Geology/CWE**  
2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of geology. Required: Instructor consent & a CWE seminar.

**GE****General Engineering****GE-101A Engineering Problem Solving**  
2 credits, Fall

Introduction to basic ideas and tools of the engineering profession. Rudiments and methods of engineering analysis, design and problem solving. Emphasis on developing skills in the algorithmic method. Corequisite: MTH-251.

**GE-101B Engineering Programming**  
2 credits, Fall

Intro to basic ideas and tools of the engineering profession. Basic preparation in rudiments and working methods of engineering design, analysis, and problem solving, with emphasis on developing skills in computer-aided problem solving methods. Intro to structured computer programming methods via MATLAB scripting language. Corequisite: MTH-251.

**GE-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. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Corequisite: GE-101A.

**GE-115 Engineering Graphics**  
4 credits, Spring

Mechanical design automation software used to design parts and assemblies, design methods used to build, maintain and modify parts. Covers 2-D documentation and isometric views cooperated with ASME standards. Includes real time shaded 3-D modeling. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: GE-101A.

**GE-211 Statics**  
4 credits, Fall

First term of engineering mechanics sequence. Force analysis in structures and machines under various loading conditions. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-253. Corequisite: PH-211.

**GE-212 Dynamics**  
4 credits, Winter

Kinematics, kinetics, work-energy, and impulse-momentum relationships of engineering systems. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass GE-211 & pass PH-211.

**GE-213 Strength of Materials**  
4 credits, Spring

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: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass GE-211.

**GED**

Courses with this prefix will not transfer with credit to a four-year institution.

**General Educational Development/Adult Basic Education****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-011 GED On TV**

0 credit, Fall/Winter/Spring/Summer  
This course allows students to complete all requirements to take the GED test to obtain a high school equivalency certificate. Students watch the programs, complete workbooks and the five required tests.

**GED-015 GED Preparation**  
0 credit, Fall/Winter/Spring

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 offered at Tri-City Alternative Program and Young Parent Opportunity Program locations. 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.

**GEO****Geography****GEO-100 Introduction to Physical Geography**

4 credits, Fall/Winter/Spring  
Physical elements of geography and the environment in which people live. Focuses on natural processes that create physical diversity on the earth including weather and climate, vegetation and soils, and landforms. Recommended: Placement in RD-115.

**GEO-110 Cultural & Human Geography**  
4 credits, Fall/Winter/Spring

Human population, agriculture, political patterns, language, religion, folk culture, popular culture, ethnic culture, urban landscapes, industry, and transportation. Recommended: Placement in RD-115.

**GEO-130 Introduction to Environmental Geography**

4 credits, not offered every term  
Explores the contemporary global environmental problems such as: overpopulation, over consumption, ozone layer depletion, pollution, acid rain, deforestation, desertification, and waste problems. Examines alternative sources of energy to fossil fuel and sustainable development strategies. Recommended: 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. Familiarizes students with the regional similarities and differences throughout the world. Recommended: 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.

**GER****German****GER-101 First-Year German**  
4 credits, Fall

Introduction to sound system and basic structural patterns of German. Emphasis on the skills of listening, comprehension, speaking, reading, writing, and cultural similarities and differences. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**GER-102 First-Year German**  
4 credits, Winter

Introduction to sound system and basic structural patterns of German. Emphasis on the skills of listening, comprehension, speaking, reading, writing, and cultural similarities and differences. Prerequisite: Pass GER-101 or instructor consent.

**GER-103 First-Year German**  
4 credits, Spring

Introduction to sound system and basic structural patterns of German. Emphasis on the skills of listening, comprehension, speaking, reading, writing, and cultural similarities and differences. Prerequisite: Pass GER-102 or instructor consent.

**GER-201 Second-Year German**  
4 credits, Fall

Review and expansion of basic language skills through discussion, reading, and writing of varied contemporary topics from the German language and cultural area. Prerequisite: Pass GER-103 or instructor consent.

**GER-202 Second-Year German**  
4 credits, Winter

Review and expansion of basic language skills through discussion, reading, and writing of varied contemporary topics from the German language and cultural area. Prerequisite: Pass GER-201 or instructor consent.

**GER-203 Second-Year German**  
4 credits, Spring

Review and expansion of basic language skills through discussion, reading, and writing of varied contemporary topics from the German language and cultural area. Prerequisite: Pass GER-202 or instructor consent.

**GIS*****Geographic Information Systems*****GIS-131 GPS/GIS Mapping with ESRI ArcPad****1 credit, not offered every term**

ESRI's ArcPad provides portable database access, mapping, GIS and navigation functions to users in the field using handheld computers.

**GIS-201 Introduction to Geographic Information System****4 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-210 Research Techniques****2 credits, Fall**

Focuses on geospatial data. How it is identified, obtained, organized, queried and managed in GIS. Covers integrating disparate data sources, industry standard formats, acquiring GPS and remotely sensed data and deriving spatial data from sources.

**GIS-220 CAD Skills for GIS****4 credits, Winter**

Introduction to basic CAD drawing and editing skills, their use in GIS, and the creation of CAD geometry that is compatible with GIS applications. Prerequisites: CDT-104 and GIS 201 Instructor consent required.

**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. Merging data from differing sources, etc. Prerequisite: CDT-104

**GIS-234 Aerial Photo Interpretation****3 credits, Spring**

Introduction to the science of aerial photography, land use classification, and techniques used to interpret images, along with relevant fieldwork. Prerequisite: GIS-230.

**GIS-236 Visual Basic Programming for GIS****3 credits, Spring**

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. Prerequisites: CDT-104, CS-121.

**GIS-250 GIS Field Work****4 credits, Summer**

Student will work on a project with a local company or agency in order to gain real-world field experience in a variety of conditions and situations. Prerequisite: GIS-282

**GIS-254 Intro to ArcView GIS****1 credit, not offered every term**

Provides conceptual overview and hands-on exposure using ArcView GIS software. Will create, edit, display, query and analyze geographic and tabular data to create presentation quality maps and charts.

**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****Spring/Fall/Winter/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.

**GIS-281 ArcGIS I****5 credits, Winter**

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. Prerequisites: GIS-220 and GIS 230.

**GIS-282 ArcGIS II****5 credits, Fall**

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-284 GIS Software Applications****5 credits, Fall**

Introduces standard techniques in typical applications of GIS, and addresses the commonalities of techniques across application areas. Corequisite: GIS 282. Prerequisite: GIS-232.

**GIS-286 Remote Sensing****4 credits, Winter**

This course covers the overview of data sources, methodology for remotely sensed data, application of data, and transformation of remotely sensed data into GRID. Prerequisite: GIS-234.

**GIS-287 Spatial Modeling and Analysis****5 credits, Winter**

Introduces answering analytical questions, the ability to overlay data sources and combine for project specific purposes. Covers spatial modeling tools to answer complex GIS questions, and the differences of analysis using vector vs. raster data. Prerequisites: GIS-284. Corequisite: GIS-288.

**GIS-288 Advanced Databases for GIS****3 credits, Winter**

Emphasis is on design, implementation, and documentation of enterprise GIS Databases. Students will work to create advanced database systems to enhance GIS software applications. Prerequisite: CS-121. Corequisite: GIS-287.

**GIS-289 Special Project****3 credits, Spring**

Design and execute a project that can be incorporated into the work experience. May be a project needed by the CWE employer or a project of interest to the student under the GIS supervisor direction.

**GS****General Science**

See also Arts and Sciences (ASC).

**GS-104 Physics**  
4 credits, Spring

Concepts and applications of mechanics, electricity and magnetism, waves, optics, and relativity.

**GS-105 Chemistry**  
4 credits, Fall

Basic knowledge of introductory chemistry. Matter and energy, models of the atom, the periodic table, naming compounds, chemical reactions, gases, liquids and solids, chemical bonding, and the mole concept.

**GS-106 Earth Science**  
4 credits, Winter

Earth structure, plate tectonics, land form development of shorelines, deserts, mountain ranges, glaciers, deep oceans, etc. Study of minerals, rock of volcanic, sedimentary, and metamorphic origin.

**GS-107 Astronomy**  
4 credits, Fall/Winter/Spring

Distance Learning: Online. Survey of astronomy for non-science majors. Topics may include: history of astronomy, planets and moons of the solar system, asteroids, meteors, comets, properties of stars, stellar evolution, star clusters, properties of galaxies, and cosmology. Also offered as an online course.

**GS-109 Meteorology**  
4 credits, not offered every year

Distance Learning: Online. A study of the atmosphere, its composition, structure and properties with emphasis on the various processes responsible for weather, climate controls and change, and the impact of atmospheric phenomena on society.

**GS-153 Introduction to Cosmology**  
4 credits, Spring

An introduction to modern scientific cosmology for non-science majors. Introduction to the research and developments in physics and astronomy that contributed to the modern model of the history of the universe. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**GS-160 Observational Astronomy**  
3 credits, Summer

Designed to introduce students to the fundamentals of observing the night sky. Students will be exposed to observational techniques and study the use of observational aids.

**HD**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

**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-100 College Survival/Disabilities**  
1-6 credits, not offered every term

For students with disabilities. Addresses the functional difficulties that a disability may impose to academic access and success. Emphasis on developing skills that increase success in college and self advocacy planning for access needs.

**HD-100 New Student Experience**  
1 credit, Fall

Designed to build college identity and introduce students to college systems and services. Focus on academic requirements and develop academic career plans.

**HD-100 The Clackamas Experience**  
1 credit, Fall/Winter/Spring

Designed for international students entering the PIE (Program of Intensive English) program or college for the first time. Introduces the PIE program, college policies and procedures, explores career interests, possible programs of study, matriculation procedures, and culture shock. Required: Instructor consent.

**HD-101 Service Learning Experience I**  
1 credit, Fall/Winter/Spring

Provides students with a service learning experience in a community setting. Students complete 22 hours of volunteer work and participate in seminars. Provides information, skill building, reflection and assessment methods. Required: Instructor consent.

**HD-102 Service Learning Experience II**  
2-6 credits, Fall/Winter/Spring

A continuation of HD-101. Recommended: Pass HD-101. Required: Instructor consent. Pending State approval.

**HD-110 Career Planning**  
2 credits, not offered every term

Identify aptitudes and abilities, examine the potential job market and gain knowledge about training and educational opportunities. This course is part of the Life and Career Options Program.

**HD-114 Life Planning**  
2 credits, not offered every term

Identify personal interests, social and interpersonal skills, home and volunteer activities and develop a plan to use the transferable skills in future employment. This course is part of the Life and Career Options Program.

**HD-120 New Student College Success**  
1 credit, Fall/Winter/Spring

Provides strategies for creating college success including understanding self-management, increasing motivation, meaningful goal setting, controlling personal time and energy, effective study habits, use of on and off campus resources.

**HD-140 Career Exploration**  
1-3 credits

Fall/Winter/Spring/Summer

Students use information about themselves (values, interests, personality and skills) and information about the world of work (career and industries) to make long term career decisions.

**HD-141 Career Advancement/LCOP II**  
3 credits, not offered every term

Explore ways to retain jobs, enhance productivity on the job, and develop work skills to advance career opportunities beyond the current level of employment within organizations

**HD-142 ADA Law at School and Work**  
3 credits, Fall

This class is a comprehensive introduction to the ADA law and its implications for people with disabilities in the academic world and the world of work.

**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-148 Dealing With Depression**  
1 credit, not offered every term

Introduction to causal theories, symptoms, treatments, and preventive methods for depression, a common mood disorder. Provides an opportunity to understand the impact of depression on the lives of those affected.

**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

Addresses elements forming and impacting self-confidence, including dealing with fear, self-esteem, personal power and establishing your center.

**HD-155 Education Planning: You Decide**  
1 credit, Fall/Winter/Spring/Summer

Develop a clear awareness of life and career goals, degree options, and employment trends. Provides a basis for selecting a major and planning your education.

**HD-156 Creative Goal Setting**  
1 credit, not offered every term

Use the creative process with a variety of media to define, clarify, plan, and achieve personal or professional goals.

**HD-190 Latino Leadership**  
1-3 credits, Fall/Winter/Spring

Teaches students of Latino descent intercultural and leadership skills, communication strategies, Latino History in the U.S. and the mentoring process.

**HD-202 Life Transitions**  
3 credits, Fall/Winter/Spring/Summer

Identify individual goals and objectives and design a program, including personal growth, to overcome barriers to economic self-sufficiency. This course is part of the Life and Career Options Program. Corequisites: HD-208.

**HD-208 Career & Life Planning**  
3 credits, Fall/Winter/Spring/Summer

Identify aptitudes and abilities, examine the potential job market and gain knowledge about training and educational opportunities. Identify personal interests, social and interpersonal skills, home and volunteer activities and develop a plan to use the transferable skills in future employment. This course is part of the Life and Career Options Program. Corequisite: HD-202.

**HD-209 Job Search Skills**  
1-3 credits

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-210 Advanced Life and Career Options**  
3 credits, not offered every term

Continued exploration of education and career options and overcoming the barriers that prevent attainment of personal, education, and career goals. Required: Instructor consent.

**HD-215 Transfer Success**  
1 credit, not offered every term

This course is designed to assist students with all elements of the process of transferring from Clackamas to any 4-year college or university.

**HD-252 Latino Issues in Higher Education**  
3 credits, Fall

Reviews cultural adaptation process of US Latinos and role of higher education in Latino contributions to US culture; teaches tools for cultural and educational self-assessment, and resources in higher education including career planning. Required: Instructor consent.

**HD 280 Human Development/CWE**  
2-6 credits Fall/Winter/Spring

Cooperative work experience. Provides students with career related experience in the field of human development. Required: Instructor consent and a CWE seminar.

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**HDF**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

**Family Studies**

See also Early Childhood Education (ECE).

**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 I: Content & History**  
3 credits, Fall

Course covers history of childbearing in the U.S, childrearing 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: Introduction to Parenting**  
3 credits, Winter

Covers topical issues related to today's diverse families including: systematic family development (vs family cycle) model. Use case study methodology, different family structures and stressors are studied: foster children, elderly parents, grandparents and immigrant parents.

**HDF-143 Effective Parenting III**  
3 credits, Spring

Emphasizes positive family problem-solving to help children become responsible, caring, loving individuals. Explore why discipline is not learned through threats and bribes. Buffer children from dangers of sexual promiscuity, drug abuse, self-destructive behavior.

**HDF-144 Effective Parenting IV**  
3 credits, not offered every term

Focuses on effective communication techniques. Help children deal with feelings, engage in cooperative behavior, and the importance of validating children's feelings.

**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 5 years, including physical, cognitive, social and emotional growth, observation and assessment.

**HDF-260 Child Abuse & Neglect**  
3 credits, Fall/Winter/Spring

Online course. 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.

**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 legal and illegal drug use; drug classification; the physiological and psychological impact of drugs on the body; and treatment modalities for drug abuse/addiction. 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, their physiological and psychological impact; and their specific treatment modalities. Prerequisite: 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. Also offered as a telecourse and online.

**HE-205 Youth Addictions**  
3 credits, Winter/Spring

Increase knowledge of adolescent development and programs designed for prevention, assessment, intervention and treatment of chemically dependent youth. Investigate specific techniques for counseling youth. May be offered online. 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. Also offered as a telecourse and an online course.

**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-261 Community CPR**  
1 credit, Fall/Winter/Spring

Completion of class with a passing grade of B or better entitles the student to an American Red Cross Certification in Adult, Child and Infant Cardiopulmonary Resuscitation.

**HE-280 Health/CWE**  
2-6 credits

**Fall/Winter/Spring/Summer**

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/Summer

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.

**HPE-296 Health & Fitness for Industry I**  
2 credits, Fall/Winter/Spring

Designed for students entering or already in physically demanding industrial occupations. Emphasis on identification and analysis of personal health and wellness issues as related to actual job setting.

**HPE-297 Health & Fitness for Industry II**  
2 credits, Fall/Winter/Spring

Designed for students entering or already in physically demanding industrial occupations. Emphasis on identification and analysis of health and wellness issues as related to actual job site itself.

**HOR**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

**Horticulture****HOR-111 Horticulture Practicum/Fall**  
6 credits, Fall

Aspects of practical horticulture. Emphasis on container and field nursery production, greenhouse crops, turf and landscape installation and maintenance. Practice in basic procedures of plant propagation, soil, water and fertilizer management, and transplanting. Seasonal projects parallel Horticulture classes. **Oregon State University transfer course.**

**HOR-114 Garden Design**  
1 credit, Winter or Spring

Introductory course for students to gain understanding and skills in the area of planning garden areas, including drawing skills to express 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.

**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.

**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.

**HOR-132 Pesticide Selection & Use**  
3 credits, Winter/Spring

Study of control methods for weed, insect, and disease pests affecting ornamental plants, emphasizing chemical and non-chemical control options, selection and proper application when handling pesticides is included. State testing for pesticide license and recertification credit is available. Also offered as an online course spring term.

**HOR-133 Horticulture Practicum/Winter**  
6 credits, Winter

Aspects of practical horticulture. Emphasis on container and field nursery production, greenhouse crops, turf and landscape installation and maintenance. Practice in basic procedures of plant propagation, soil, water and fertilizer management, transplanting, pruning, pesticide application, and equipment operation.

**HOR-134 Herb Growing & Gardening**  
1 credit, Winter or Spring

Study of herb plant propagation and garden use. Garden culture and design covered.

**HOR-140 Soils & Fertilizers**  
3 credits, Spring

Soil characteristics and management, including nutritional elements and the relationship between the soil and plant growth.

**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.

**HOR-143 Horticulture Practicum/Spring**  
6 credits, Spring

Aspects of practical horticulture. Emphasis on container and field nursery production, greenhouse crops, turf and landscape installation and maintenance. Practice of plant propagation, soil, water and fertilizer management, transplanting, equipment operation, and maintenance. Seasonal projects parallel Horticulture classes.

**HOR-144 Basic Pruning**  
1 credit, Spring

Why and how to prune trees, shrubs, and vines. Covers tools used for various pruning practices.

**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.

**HOR-146 Fruit Tree Short Course**  
1 credit, Spring

Tree fruit recommendations for the Willamette Valley will be presented. Orchard bloom time, pruning, training, tree fruit insects and diseases, asexual propagation, harvesting, storage and uses of tree fruit will be discussed.

**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-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.

**HOR-213 Computer-Aided Landscape Design****3 credits, Winter**

Development of skills with LandCadd software and its use in landscape design. Computer-aided design (CAD) techniques needed to produce finished landscape designs, plant lists, and reports. Prerequisite: Pass CS-090 & 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. **Oregon State University transfer course.**

**HOR-220 Plant Propagation/Fall****3 credits, Fall**

Proper techniques for reproducing plants from seeds, cuttings, and grafting. Emphasis on seasonal plant production. (See also HOR-233 & HOR-242.)

**HOR-222 Horticultural Computer Applications [C]****2 credits, Fall/Winter**

Utilizes database, spreadsheet, word-processing, and other computer programs for record keeping and management for growers and landscape businesses. **Oregon State University transfer course.** Prerequisite: Pass CS-090.

**HOR-223 Flower Arranging****3 credits, Fall**

Development of skills in designing table arrangements using cut flowers, artificial, and dried flowers.

**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.

**HOR-225 Principles of Arboriculture****3 credits, Fall**

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. **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. **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. **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.

**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.

**HOR-231 Irrigation/Drainage Design****3 credits, Fall/Winter**

Design of irrigation and drainage systems for various situations, including underground and above-ground, residential and commercial systems.

**HOR-232 Commercial Floral Design****3 credits, Winter**

Creating specific floral pieces including corsages, wedding and funeral arrangements using cut flowers, artificial, and dried flowers.

**HOR-233 Plant Propagation/Winter****3 credits, Winter**

Proper techniques for reproducing plants using cuttings, grafting, and division. Emphasis on seasonal plant production. (See also HOR-220 & HOR-242.)

**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. **Oregon State University transfer course.** Prerequisite: Pass HOR-229.

**HOR-235 Weed Identification****2 credits, Fall**

Identification and life cycles of weeds commonly found in landscapes and nurseries. Up to 15 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. Up to 15 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. Up to 15 recertification credits may be granted by the Oregon Department of Agriculture toward pesticide license renewal.

**HOR-238 Landscape Business Operations****3 credits, Winter**

Includes business practices, management, organizational structures of landscape business, and application of practices to develop or manage a landscape business.

**HOR-239 Tree Climber Training****2 credits, Winter**

The safe use of rope and saddle tree climbing procedures will be covered through lecture, discussion, and field practice.

**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.

**HOR-241 Nursery Management**  
3 credits, Spring

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. (See also HOR-220 & HOR-233.)

**HOR-243 Tree & Shrub Pruning/Spring**  
3 credits, Spring

Pruning of woody ornamentals, including trees, shrubs, vines, and groundcovers. Emphasis on pruning of spring flowering ornamentals and training new growth.

**HOR-244 Environmental Landscape Design**  
3 credits, Spring

Design of landscapes to develop ecosystems using plants to encourage wildlife and low maintenance. Includes the proper use and installation of wildlife food plants and various water habitats.

**HOR-245 Advanced Landscape Design**  
3 credits, Spring

Advanced skill development in drawing, site analysis, and design, including commercial and residential landscapes meeting professional standards. **Oregon State University transfer course.** Prerequisite: Pass HOR-229 and HOR-234.

**HOR-246 Organic Gardening**  
3 credits, Spring

Philosophy, writers, principles and practices of organic gardening. Organic gardening techniques appropriate to the maritime Pacific Northwest.

**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.

**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.

**HOR-250 Western Herbs**  
1 credit, Spring

This course 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, Spring

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, Summer

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

Cooperative work experience. 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-281 Horticulture/CWE**  
6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. 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

Cooperative work experience. On-the-job experience in the various segments of horticulture. Students enroll in co-op after completing nine credits of horticulture courses. This class is available to students in the Horticulture program who wish to use co-op as an elective credit. Required: A CWE seminar.

**HPD**

Courses with this prefix may not transfer with credit 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, Fall/Winter/Spring/Summer  
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.

**HPD-009 Pain Management for Nurses**  
0.6 ceu, not offered every term

Fulfills 6 of the 7 hours of pain management education mandated by the Oregon State Board of Nursing (OSBN). Per OSBN requirement, students will need to complete an additional one-hour course online provided by the Oregon Pain Management Commission ([www.oregonpain.org/Presentation.aspx](http://www.oregonpain.org/Presentation.aspx)).

**HPD-130 Advanced Cardiac Emergencies**  
1 credit, not offered every term

Develops skills at the provider level in accordance with American Heart Association Advanced Cardiac Life Support guidelines. Successful completion of the course leads to certification as an AHA ACLS Provider. Prerequisite: AHA BLS Healthcare Provider training within the past two years.

**HS**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

## ***Human Services/ Gerontology***

### **HS-100 Introduction to Human Services 3 credits, Fall**

Student will examine interpersonal skills, personal values, decisions and problems for human service trainees. The struggles, stress, demands, strains and rewards of working in this field will be addressed. Required for Human Services degree.

### **HS-130 Introduction to Hospice Care 2 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, types of services, eligibility criteria, mission, policies, politics, service delivery systems of agencies, identification of client needs, and referral processes, historical, political and social trends.

### **HS-165 Activity Director 3 credits, not offered every term**

Provides training for activity directors in long-term care facilities. Focuses on therapeutic activities and the appropriate use of people and material resources to promote continual growth and development in long-term residents.

### **HS-170 Field Experience in 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 practicum courses. Requirement for Human Services degree.

### **HS-267 Intervention Strategies Working with Families 4 credits, Spring**

Helps expand students' knowledge of working with families, using specific theories and techniques. Using a multicultural perspective, the history of family structure and various contemporary, non-traditional forms are addressed.

### **HS-280 Gerontology/CWE 6 credits, Spring**

Cooperative work experience. On-the-job experience to acquaint gerontology students with the roles and related activities of organizations serving the elderly. This is an opportunity to evaluate the practice theories and techniques learned in the classroom. Required: Instructor consent & a CWE seminar.

### **HS-280 Human Services Generalist I/CWE 2-6 credits, Fall/Winter/Spring**

Cooperative work experience. Supervised experience in human services including but not limited to: early childhood care, criminal/juvenile justice; gerontology, social service and other related occupations. Prerequisite: HS-170 Introduction to Field Experience. Required: Instructor consent & a CWE seminar.

### **HS-281 Human Services Generalist II/ CWE 4 credits, Fall/Winter/Spring**

Cooperative work experience level II. Supervised experience in human services including but not limited to: early childhood care, criminal/juvenile justice; gerontology, social service and other related occupations. Prerequisite: HS-170 Introduction to Field Experience. Required: Instructor consent & a CWE seminar.

### **HS-282 Human Services Generalist III/ CWE 4 credits, Winter/Spring**

Cooperative work experience level III. Supervised experience in human services including but not limited to: early childhood care, criminal/juvenile justice; gerontology, social service and other related occupations. Prerequisite: HS-170 Introduction to Field Experience. Required: Instructor consent & a CWE seminar.

**HST**

## ***History***

### **HST-101 History of Western Civilization 4 credits, Fall/Winter**

Origins and development of western civilization from ancient times to the 1300s. Note: Certain sections of HST-101 are offered as a telecourse. Recommended: Placement in RD-115.

### **HST-102 History of Western Civilization 4 credits, Winter/Spring**

Origins and development of western civilization from the Renaissance to the 1800s. Note: Certain sections of HST-102 are offered as a telecourse. Recommended: Placement in RD-115.

### **HST-103 History of Western Civilization 4 credits, Fall/Spring**

Origins and development of western civilization in the 19th and 20th centuries. Note: Certain sections of HST-103 are offered as a telecourse. Recommended: Placement in RD-115.

### **HST-121 Readings in European History 4 credits, not offered every year**

Independent readings in European History from ancient times to ca. 1300. Recommended: Placement in RD-115. Prerequisite: Pass HST-101.

### **HST-122 Readings in European History 4 credits, not offered every year**

Independent readings in European History from 1300 to 1800. Recommended: Placement in RD-115. Prerequisite: Pass HST-102.

### **HST-123 Readings in European History 4 credits, not offered every year**

Independent readings in European History from 1800 to the present. Recommended: Placement in RD-115. Prerequisite: Pass HST-103.

### **HST-201 History of the United States 4 credits, Fall**

Covers the period from early discovery to the Age of Jackson. Recommended sequence be taken in order. Also offered as a telecourse. Recommended: Placement in RD-115.

### **HST-202 History of the United States 4 credits, Winter**

Covers the period from the Age of Jackson to World War I. Recommended sequence be taken in order. Also offered as a telecourse. Recommended: Placement in RD-115.

**HST-203 History of the United States**  
4 credits, Spring

Covers the period since WWI. Recommended sequence be taken in order. Also offered as a telecourse. Recommended: Placement in RD-115.

**HST-238 History of Oregon**  
4 credits, Fall

Survey of history from the earliest days of exploration through the establishment of Portland and the economics of the 1880s. Emphasis on Lewis and Clark, founding of Astoria, era of the missionaries, Oregon Trail, and attainment of Statehood. Recommended: Placement in RD-115.

**HST-239 History of Oregon**  
4 credits, Winter

Survey of history from the 1880s to the present. Emphasis on progressive legislation, women's suffrage, and economic development of the state. Tom McCall and his legacy, and the implications for current issues in politics. Recommended: Placement in RD-115.

**HST-280 History/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

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-150 The Columbia Basin:  
Watershed of the Great Northwest [C]**  
5 credits, Fall

The Columbia River watershed dominates the culture and economy of the Pacific Northwest, past, present, and future. This course explores the Columbia River Basin and its natural and human history. Includes field trips. Recommended: Placement in RD-115.

**HUM-151 The Columbia Basin:  
Watershed of the Great Northwest [C]**  
5 credits, Winter

The Columbia River is the largest river in the western United States. This course focuses on management of the Columbia River Basin and its resources, with Portland as the metropolis of the watershed. Includes field trips.

**HUM-152 The Columbia Basin:  
Watershed of the Great Northwest [C]**  
5 credits, Spring

Issues and opportunities associated with the Columbia River watershed are of immediate importance. This course grapples with the future of the Columbia River Basin and the living organisms (including humans) dwelling in it. Includes field trips.

**HUM-160 Faith & Reason [C]**  
5 credits, Fall

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: Placement in RD-115.

**HUM-161 Faith & Reason [C]**  
5 credits, Winter

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.

**HUM-162 Faith & Reason [C]**  
5 credits, Spring

Introduction to classical philosophy, sacred texts, modern fiction, poetry, theology, evolutionary biology, and cosmology. Consideration of how personal concepts of faith and reason and institutions of science and religion, shape both personal intellectual landscapes.

**HUM-170 Metamorphoses [C]**  
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: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-171 Metamorphoses [C]**  
5 credits, not offered every year

Explores the effect of change on individuals and societies. Helps students evaluate the probable success of various means of promoting personal, social/cultural/political, and paradigmatic change through readings in Darwin, Marx, Gandhi, and Kafka. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-172 Metamorphoses [C]**  
5 credits, not offered every year

Explores, analyzes, and evaluates the changes occurring now. Through independent study, peer instruction, website and digital portfolio development, students will examine the intersections of cultural, social, individual, religious, paradigmatic shifts happening in our own lifetimes. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-180 Pathway to Sustainability**  
5 credits, not offered every year

Can we create a more sustainable and just world? We will 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: Placement in RD-115.

**HUM-181 Pathway to Sustainability**  
5 credits, not offered every year

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: Placement in RD-115.

**HUM-182 Pathway to Sustainability**  
5 credits, not offered every year

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: Placement in RD-115.

**HUM-190 Human Nature**  
5 credits, not offered every year

This course explores the complex connections between humans and nature and specifically asks, "What is human nature?" We will look at humans as biological organisms, language speakers, constructors and constructions of society and culture. Recommended: Placement in RD-115.

**HUM-191 Human Nature**  
5 credits, not offered every year

Explores the complex connections between humans and nature. How have we described and represented nature to ourselves? How have humans over the course of time understood themselves and interacted with the natural world? Recommended: Placement in RD-115.

**HUM-192 Human Nature****5 credits, not offered every year**

Explores the complex connections between humans and nature. How have our understandings of nature and human nature changed? Do humans have unique responsibilities toward the natural world and, if so, what are they? Recommended: Placement in RD-115.

**HUM-212 Introduction to Chicano/a – Latino/a Studies****4 credits, not offered every term**

This interdisciplinary course surveys the socio-historical and political-economic experiences and cultural roots of Chicano/as and Latino/as in the United States. Topics include race, class, gender, language, immigration, various social institutions (education, family, religion), labor issues, rural/urban cultures, reform and social movements, cultural resistance and expressive culture. Recommended: Placement in WR-095.

**HUM-220 Modern War in American Popular Culture****4 credits, not offered every term**

Emphasizes observation, reflection, description, and critical thinking in order to gain a deeper understanding of the war in Vietnam and the Gulf War as seminal events represented in American popular culture. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-221 Science in American Popular Culture****4 credits, not offered every term**

Emphasizes observations, reflection, description, and critical thinking in order to gain a deeper understanding of the development of evolutionary theory, catastrophe theory, and historical disasters as represented in American popular culture. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-222 Civil Rights in American Popular Culture****4 credits, not offered every term**

Emphasizes observation, reflection, description, and critical thinking in order to gain a deeper understanding of civil rights history as represented in American popular culture and the ways in which concepts of civil rights have expanded. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-223 The Humanistic Tradition****4 credits, not offered every year**

Multi-disciplinary examination of major issues and topics from prehistory through the middle ages including perspectives from anthropology, history, art, literature, philosophy, religion, and science. Recommended: Placement in RD-115.

**HUM-224 The Humanistic Tradition****4 credits, not offered every year**

Multi-disciplinary examination of major issues and topics from the Renaissance Enlightenment from anthropology, history, art, literature, philosophy, religion, and science. Recommended: Placement in RD-115.

**HUM-225 The Humanistic Tradition****4 credits, not offered every year**

Multi-disciplinary examination of major issues and topics from 19<sup>th</sup> and 20<sup>th</sup> centuries including perspectives from anthropology, history, art, literature, philosophy, religion, and science. Recommended: Placement in RD-115.

**HUM-226 Science & Religion****4 credits, not offered every term**

Examines different aspects of science and religion and how scientific inquiry affects beliefs. Discusses the historical development of astronomy, cosmology, physics, biology, and theology. Investigates the current state of questions in religion and science. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-227 Civil War & Psychology****4 credits, not offered every term**

Explores causes and effects of the Civil War, with a special emphasis on social, cultural, and economic factors. Analyzes the character and personality of civilian and military leaders of both the North and South. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-228 The Renaissance****4 credits, not offered every term**

Students gain insight into its influence on architecture, emphasis upon development of individual personality, confidence in the power of formal education, belief in citizens' participation in public life, and the rise of scientific inquiry. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-229 Latin American Studies****4 credits, not offered every term**

Survey and analysis of Latin America from pre-colonization to the modern era. Focuses on the political, social, cultural, and economic structure of Latin America. Discusses race and class relations, imperialism, revolution, neo-colonialism, and dependency theory. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-230 Gender & Material Culture****4 credits, not offered every term**

Provides in-depth study of social and cultural significance of material culture as it applies to gender, within a historical context. Focuses is on the material world of American society from the colonial era to present. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-231 Engendered Identities****4 credits, not offered every term**

Examines the various perspectives on the development of gender identities and looks specifically at the ways in which concepts of femininity and masculinity have shaped cultural images, identities and experiences cross-culturally, globally and historically. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-232 Women in American History****4 credits, not offered every term**

Explores changing roles of women in American history. Emphasis on concepts of separate spheres, public/private realms, development of women's rights, role of women in reform and social movements, and women's roles and experiences across race and class. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-233 Electronic Culture [C]****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: Placement in RD-115; pass WR-095 or placement in WR-121.

**HUM-234 Freedom, Privacy and Technology [C]****4 credits, not offered every term**

Investigation of how the development of computer based technologies is transforming the notion of privacy, anonymity, and individual freedom. Explores social impact of knowledge and data gathering techniques, surveillance, mass marketing, and commercialization of online world. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

## J Journalism

**J-134 Photojournalism****3 credits, Fall/Spring**

Emphasizes composition, lighting, and weather conditions, and creative ways to illustrate a story. Weekly shooting assignments. Recommended: Basic photography skills.

**J-211 Mass Media & Society****3 credits, Spring**

Introductory class provides an understanding of the development and operations of media. Includes discussion of newspapers, magazines, electronic media and advertising, and public relations. Required for journalism majors at the University of Oregon. Recommended: Placement in RD-115.

**J-215 Publications Lab [C]****1 credit, Fall/Winter/Spring**

Provides opportunity to work on student publications in areas of writing, photography, editing, production, or advertising.

**J-216 Reporting [C]****3 credits, Fall/Winter/Spring**

Introduces the student to the fundamentals of journalism: news gathering, newspaper style, interviewing, lead writing, news writing and the laws of libel. Prerequisite: Placement in WR-121 or pass WR-095.

**J-218 Editing & Design [C]****3 credits, Winter**

Instruction in copy editing, headline writing, page design, layout, and desktop publishing.

**J-220 Introduction to Broadcast Journalism****4 credits, Fall**

Provides students with the opportunity to develop skills needed to adapt and translate print journalism to other media via scriptwriting, video and audio production, web output and digital video editing. Recommended: Placement in RD-115.

**J-226 Electronic Newspaper Production [C]****3 credits, Fall/Winter/Spring**

Weekly production of The Clackamas Print, the college newspaper. Students participate in an afternoon lab, producing design, layout and paste-up of the paper using desktop publishing.

**J-280 Journalism/Public Relations/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.

**MA**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional 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 health care 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.

**MA-115 Phlebotomy****1 credit, Spring/Summer**

Develops basic understanding and application of blood specimen collection and handling techniques used in the ambulatory care setting and hospital laboratory setting. Required: Instructor consent.

**MA-116 Introduction to Medications****2 credits, Winter**

Medications commonly administered in the ambulatory care setting. Legal aspects of administering medications as well as therapeutic and adverse outcomes of medications. Principles of preparing and administration of oral and parenteral medications. Required: Instructor consent. Prerequisite or corequisite: 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.

**MA-118 Examination Room Techniques****3 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. Prerequisite: Pass BI-055, pass MA-110 & pass MA-112.

**MA-119 Medical Assistant Program I****4 credits, Spring**

Supervised unpaid assignment in the ambulatory care setting to gain administrative experience. May not be challenged. Restricted to Medical Assistant students who have completed fall and winter term requirements. Prerequisites: MA-115, MA-121, and PSY-215.

**MA-120 Medical Assistant Practicum II****6 credits, Spring**

Supervised unpaid assignment in the ambulatory care setting to gain clinical experience. Required: Instructor consent. Prerequisite: MA-119.

**MA-121 Clinical Lab Procedures II****2 credits, Spring**

Continuation of common laboratory procedures used in the ambulatory care setting. May not be challenged. Required: Instructor consent. Prerequisite: Pass MA-117.

**MA-145 Medical Coding & Health Information Management**  
3 credits, Fall

ICD9/CPT coding, insurance and billing, accounts receivable and data management in the ambulatory care office. May not be challenged. Required: Instructor consent. This course will NOT meet the requirement for the Medical Office Administrative Assistant certificate.

**MFG**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

## **Manufacturing Technology**

The Manufacturing Department has a variety of programs and classes. Most Manufacturing classes can be customized to meet the needs of industry. For additional information contact the Customized Training Department at ext. 3523.

**MFG-047 Manufacturing Specialist I**  
10 credits, not offered every term

Workplace readiness course whereby students will gain an understanding of manufacturing processes through hands on experience. Topics may include: machining fundamentals, CNC machine operation and welding processes. Workplace success skills and interpersonal skills also covered. Corequisite: MFG-048.

**MFG-048 Manufacturing Specialist II**  
10 credits, not offered every term

A continuation of MFG-047. Corequisite: MFG-047.

**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 & OSHA**  
3 credits, Fall/Winter/Spring

Covers safety hazards and OSHA requirements in the workplace. Covers eye safety, grinding wheel hazards, electrical and chemical hazards, slips and falls, back injuries, and environmental regulations. Independent projects will be required.

**MFG-109 Computer Literacy for Technicians [C]**  
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. Meets computer literacy requirement.

**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, and introduction to CNC technology. Recommended: MFG-104 & 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. Surface grinding, selection of abrasive grinding wheels and introduction to CNC technology included. Recommended: 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, cylindrical grinding, and basic CNC technology. Recommended: MFG-111 & MFG-112.

**MFG-124 Statistical Process Control**  
3 credits, Spring

Concepts and methods to organize and implement an ongoing quality improvement program. Integrates Dr. Demings management philosophy with problem solving and charting techniques. Covers x-bar, R and C charts, and capability analysis.

**MFG-130 Basic Electricity I**  
3 credits, not offered every term

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, not offered every term

Covers application of several theories learned in previous term. Additional topics will include: motors, controls, alignment, pulleys and gears, troubleshooting theory, power distribution and lighting, electrical wiring and schematics. Recommended: MFG-130, MTH-060.

**MFG-132 Basic Electricity III**  
3 credits, not offered every term

Study of the Oregon State Laws and Administrative rules and the National Electrical Code (NEC) in a practice test style format. Includes examination and test techniques. Recommended: MFG-130, 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: 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).

**MFG-200 Introduction to CNC Programming**

1 credit, not offered every term

Short course designed to prepare students for further study in CNC programming. Covers fundamentals of G & M code programming by completing several CNC programs, using simulation software and by testing their programs on a vertical machining center. Recommended: MFG-111.

**MFG-201 CNC I: Set-up & Operation**  
4 credits, Fall/Spring

"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: MFG-109, MFG-112, 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: 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: 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: MFG-201 & 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: MFG-204

**MFG-206 Computer-Aided Manufacturing III**

2 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: MFG-205.

**MFG-209 Programming and Automation for Manufacturing [C]**

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: 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: MFG-201 & 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 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-240 Coordinate Measuring Machine Basics**

2 credits, not offered every term

Introduction to measurements of part features and locations using a Brown & Sharpe CMM. Includes set-up for datum dimensioning of part features and principles of CMM's as they apply to industry to verify quality.

**MFG-271 MasterCam Mill I**

4 credits, not offered every term

Covers the creation and manipulation of two and three dimensional wire frame models as well as the creating, editing, and verification of 2-1/2 axis toolpaths. A fundamental understanding of the CAD/CAM process will be gained.

**MFG-272 Mastercam Mill II**

4 credits, not offered every term

Students construct three-dimensional geometric models using solids and surface modeling techniques. Students program models using advanced multi-axis programming techniques utilizing all aspects of roughing and finishing. Projects verified with solids toolpath verification. Recommended: MFG-271 or prior experience.

**MFG-273 Mastercam Lathe**

3 credits, not offered every term

Covers geometry creation and lathe programming using Mastercam to generate toolpaths such as: Rough, Finish, Thread and Drill. Mill/turn machining conventions, C-axis programming, tool libraries and solids toolpath verification are also covered. Recommended: MFG-271 or prior experience.

**MFG-274 Mastercam Router**

4 credits, not offered every term

Covers creation of wire frame models and solid bodies relative to the wood working industry. Creating, editing, and verifying tool paths for CNC router applications. Focus on the CAD/CAM process from print to part using the current release of Mastercam Router.

**MFG-280 Manufacturing Technology/ CWE**

2-6 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 & 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, and introduction to graphs, and signed numbers. 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  
Topics include problem-solving, estimating, metric measurement, simple geometry, scientific notation, accuracy and precision of measurements, and an introduction to probability and statistics. Prerequisite: Pass MTH-020 with a "C" or better; or placement in MTH-050.

**MTH-054 Math for Health Care Professionals**

3 credits, Fall/Winter  
Topics include problem solving, ratios and proportions, 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 may not be waived.

**MTH-060 Algebra I**

4 credits, Fall/Winter/Spring/Summer  
An introduction to topics in algebra. Designed for review or for the beginner, 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, Fall/Winter/Spring/Summer  
Topics include introduction to algebra and polynomials, solving equations, ratio and proportions, and trigonometry. Prerequisite: Pass MTH-050 with a "C" or better; or placement in MTH-080.

**MTH-082 Math for Water Technology**

1-4 credits, Fall/Winter  
Math problem solving for water, wastewater and ultrapure water applications. Problems include flow rate, chemical dosage, detention time, 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. This course may not be waived.

**MTH-085 Technical Mathematics III**

3 credits, Fall/Winter/Spring/Summer  
Topics include nonlinear equations, quadratic equations, functions, trigonometric functions, and applications of solid geometry. Prerequisite: Pass MTH-080 with a "C" or better; or placement in MTH-085.

**MTH-092 Math for Computer Technicians**

4 credits, Fall/Winter  
A survey of topics relevant to computer technicians that includes number systems, logic, truth tables, Boolean algebra, base 2 and base 16 representation, and circuit reduction. The course will emphasize problem solving techniques, and will involve the use of appropriate computer software. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass CS-120, pass MTH-065 with a "C" or better; or placement in MTH-095. This course may not 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  
A transfer mathematics course for non-science majors. The topics covered in this course focus students on critical thinking, problem solving, mathematical communication, and applications relevant to contemporary society. Recommended: 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 or statistics. Standards-based approaches to functions and their properties. Particular attention will be paid to the use of functions to model applications and solve problems. Recommended: 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 for students preparing for calculus. Standards-based approaches to trigonometric functions, polar coordinates, vectors, and parametric equations. Particular attention will be paid to modeling applications and solving problems. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-111 with a "C" or better.

**MTH-211 Fundamentals of Elementary Math I**

4 credits, Fall  
Problem solving, logic, set theory, and whole numbers. Recommended: 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, Winter

Integers, rational numbers, real numbers, probability and statistics. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-211 with a "C" or better.

**MTH-213 Fundamentals of Elementary Math III**  
4 credits, Spring

Geometry, measurement, computer software applications. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-212 with a "C" or better.

**MTH-243 Probability & Statistics**  
4 credits, Fall/Winter/Spring/Summer

Descriptive statistics, elementary probability, random variables, and inferences on the mean. Recommended: 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-244 Statistics**  
4 credits, Fall/Winter/Spring/Summer

Hypothesis tests and confidence intervals for one and two populations, linear regression, test for association, and analysis of variance. A student project is required. Recommended: 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. Recommended: 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/Summer

Topics and applications of integration. Recommended: 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, Fall/Spring

Additional topics in calculus including sequences and series. Recommended: 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, Winter

The study of vectors and analytic geometry in three-space, the calculus of vector-valued functions, and the calculus of several variables. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-253 with a "C" or better.

**MTH-256 Differential Equations**  
4 credits, Spring

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: Placement in RD-115; pass WR-095 or placement in WR-121. Corequisite: MTH-253.

**MTH-261 Linear Algebra**  
4 credits, Fall

An introduction to systems of linear equations, vectors, matrices, linear transformations, determinants, and applications of these topics. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-252 with a "C" or better.

**MTH-280 Mathematics/CWE**  
2-6 credits  
Fall/Winter/Spring/Summer

Cooperative work experience. Practical experience in teaching, tutoring or applying mathematics while supervised by a teacher or mathematician. Required: Instructor consent & a CWE seminar.

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**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.

**MUP-102 Concert Band**  
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. Tuition waivers available. Required: ability to read music and play a band instrument.

**MUP-104 Pep Band**  
0-1 credit, Fall/Winter/Spring

Instrumental performing group concentrating on rock, pop, and contemporary styles in the small to medium-sized group setting. No audition.

**MUP-105 Jazz Ensemble**  
2 credits, Fall/Winter/Spring

Instrumental performing group concentrating on jazz, Afro-Cuban, funk, and contemporary styles in the "big-band" setting. Includes exploration of jazz improvisation and styles of famous jazz orchestras and composers.

**MUP-121 Clackamas Chorale**  
1 credit, Fall/Winter/Spring

College-level vocal ensemble (mixed, male and female) focusing on a variety of musical styles, sound vocal techniques, and sight singing. Nonmajors, including community singers, welcome. No audition.

**MUP-122 Chamber Choir**  
2 credits, Fall/Winter/Spring

Select vocal ensemble which rehearses and performs choral music from the Renaissance to the 20th 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.

**MUP-125 Vocal Jazz Ensemble**  
2 credits, Fall/Winter/Spring

Performing ensemble that cultivates musical, professional, and personal growth through rehearsal and performance. Includes study of jazz as it applies to vocal ensemble combined with rhythm section. Emphasis on style, improvisation, and techniques.

**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.

**MUP-142 Chamber Ensemble: Jazz Combo I****0-1 credit, Fall/Winter/Spring**

Instrumental performing group concentrating on jazz, Afro-Cuban, and contemporary styles in the combo/small group setting. Includes exploration of jazz improvisation and styles of famous jazz performers, and composers. 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. Recommended: Corequisite MUP-104, MUP-121 or MUP-122.

**MUP-171 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.

**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.

**MUP-174 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.

**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.

**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.

**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.

**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.

**MUP-178 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.

**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.

**MUP-180 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.

**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.

**MUP-181 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.

**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.

**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.

**MUP-183 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.

**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.

**MUP-184 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.

**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.

**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.

**MUP-186 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.

**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.

**MUP-188 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.

**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.

**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.

**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.

**MUP-191 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.

**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.

**MUP-194 Chamber Ensemble: Percussion****1 credit, Fall/Winter/Spring**

Instrumental performing group concentrating on percussion literature from all musical periods. Tuition waivers available to deserving students. Required: Instructor consent.

**MUP-202 Concert Band****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. Tuition waivers available. Required: Ability to read music and play a band instrument.

**MUP-204 Pep Band****0-1 credit, Fall/Winter/Spring**

Instrumental performing group concentrating on rock, pop, and contemporary styles in the small to medium-sized group setting. No audition.

**MUP-205 Jazz Ensemble****2 credits, Fall/Winter/Spring**

Instrumental performing group concentrating on jazz, Afro-Cuban, funk, and contemporary styles in the "big-band" setting. Includes exploration of jazz improvisation and styles of famous jazz orchestras and composers.

**MUP-221 Clackamas Chorale****1 credit, Fall/Winter/Spring**

College-level vocal ensemble mixed, male and female) focusing on a variety of musical styles, sound vocal techniques, and sight singing. Nonmajors, including community singers, welcome. No audition.

**MUP-222 Chamber Choir****2 credits, Fall/Winter/Spring**

Select vocal ensemble which rehearses and performs choral music from the Renaissance to the 20th 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.

**MUP-225 Vocal Jazz Ensemble****2 credits, Fall/Winter/Spring**

Performing ensemble that cultivates musical, professional, and personal growth through rehearsal and performance. Includes study of jazz as it applies to vocal ensemble combined with rhythm section. Emphasis on style, improvisation, and techniques.

**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.

**MUP-242 Chamber Ensemble: Jazz Combo IV****0-1 credit, Fall/Winter/Spring**

Instrumental performing group concentrating on jazz, Afro-Cuban, and contemporary styles in the combo/small group setting. Includes exploration of jazz improvisation and styles of famous jazz performers, and composers.

**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. Recommended: Corequisite MUP-204, MUP-221 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.

**MUP-271 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.

**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.

**MUP-274 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.

**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.

**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.

**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.

**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.

**MUP-278 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.

**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.

**MUP-280 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.

**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.

**MUP-281 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.

**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.

**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.

**MUP-283 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.

**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.

**MUP-284 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.

**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.

**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.

**MUP-286 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.

**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.

**MUP-288 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.

**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.

**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.

**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.

**MUP-291 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.

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**MUS****Music****MUS-101 Music Fundamentals**

3 credits, Fall

Introduction to fundamentals of reading and writing music. Designed for non-music majors or majors needing substantial preparation for Music Theory I.

**MUS-101L MIDI Lab [C]**

0 credit, Fall

A MIDI lab in which Music Fundamentals students improve their music skills and become familiar with music-related software packages. The applications are designed to reinforce concepts presented in MUS-101.

**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-102L MIDI Lab [C]**  
**0 credit, Winter**

A MIDI lab in which Music Fundamentals students improve their music skills and become familiar with music-related software packages. The applications are designed to reinforce concepts presented in MUS-102.

**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-103L MIDI Lab [C]**  
**0 credit, Winter**

A MIDI lab in which Music Fundamentals students improve their music skills and become familiar with music-related software packages. The applications are designed to reinforce concepts presented in MUS-103.

**MUS-105 Music Appreciation [C]**  
**3 credits, Fall/Winter/Spring/Summer**

Explores music from the Medieval through the 20th Century featuring instrumental and vocal music. Study of musical terms, instruments of the orchestra, musical genres and composers including Haydn, Mozart, Beethoven, Tchaikovsky, Brahms, and Stravinsky. Note: Certain sections of MUS-105 are offered online.

**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/Summer**

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, 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, 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 & pass MUS-108.

**MUS-111 Music Theory I**  
**3 credits, Fall**

Presents the diatonic material and structure of tonal music in theory and practice. Required for music majors. Required: Ability to read music. Recommended: Pass MTH-095 or placement in MTH-111; placement in RD-115; Pass WR-095 or placement in WR-121. Corequisites: MUS-111L, MUS-114 & MUS-127.

**MUS-111L MIDI Lab [C]**  
**0 credit, Fall**

Introduces students to Finale (music notation software) on Macintosh computers. Required for first-year music majors. Corequisites: MUS-111, MUS-114 & MUS-127.

**MUS-112 Music Theory I**  
**3 credits, Winter**

Presents the diatonic material and structure of tonal music in theory and practice. Required for music majors. Required: Ability to read music. Recommended: Pass MTH-095 or placement in MTH-111, placement in RD-115; pass WR-095 or placement in WR-121. Corequisites: MUS-112L, MUS-115 & MUS-128. Prerequisites: Pass MUS-111 & pass MUS-111L.

**MUS-112L MIDI Lab [C]**  
**0 credit, Winter**

Introduces students to Finale (music notation software) on Macintosh computers. Required for first-year music majors. Corequisites: MUS-112, MUS-115 & MUS-128.

**MUS-113 Music Theory I**  
**3 credits, Spring**

Presents the diatonic material and structure of tonal music in theory and practice. Required for music majors. Required: Ability to read music. Recommended: Pass MTH-095 or placement in MTH-111, placement in RD-115; pass WR-095 or placement in WR-121. Corequisites: MUS-113L, MUS-116 & MUS-129. Prerequisites: Pass MUS-112 & pass MUS-112L.

**MUS-113L MIDI Lab [C]**  
**0 credit, Spring**

Introduces students to Finale (music notation software) on Macintosh computers. Required for first-year music majors. Corequisites: MUS-113, MUS-116 & MUS-129.

**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. Corequisites: MUS-111, MUS-111L & MUS-127.

**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. Corequisites: MUS-112, MUS-128 & MUS-112L. 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. Corequisites: MUS-113, MUS-113L & MUS-129. Prerequisite: Pass MUS-115.

**MUS-120 Finale I [C]****2 credits, not offered every term**

Fundamentals, specialized techniques and in-depth study or advanced techniques of computer-generated music notation via Finale for Macintosh. Prerequisites: Pass MUS-113, pass MUS-113L & pass MUS-129.

**MUS-121 Finale II [C]****2 credits, not offered every term**

Fundamentals, specialized techniques and in-depth study or advanced techniques of computer-generated music notation via Finale for Macintosh. Prerequisite: Pass MUS-120.

**MUS-122 Finale III [C]****2 credits, not offered every term**

Fundamentals, specialized techniques and in-depth study or advanced techniques of computer-generated music notation via Finale for Macintosh. Prerequisite: Pass MUS-121.

**MUS-124 Jazz Arranging/Finale [C]****3 credits, not offered every term**

Introduction to jazz arranging taught via Finale, a music notation program. Includes ranges, transposition, and playing techniques of various instruments. Emphasis on current stylistic approaches and integration of electronic instruments.

**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. Corequisites: MUS-111, MUS-111L & MUS-114.

**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. Corequisites: MUS-112, MUS-112L & MUS-115. 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. Corequisites: MUS-113, MUS-113L & MUS-116. 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 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 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 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****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****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****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 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 own instrument.

**MUS-139 Group Guitar III****1 credit, Spring**

For intermediate to advanced players. Covers finger picking, lead guitar, rock and popular styles, music reading, and music theory. Students provide 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.

**MUS-141 Introduction to the Music Business [C]****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 [C]****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 Roland sound modules, Fatar keyboard controllers, Behringer mixers, and other common production software/hardware.

**MUS-143 Introduction To Electronic Music II: Sequencing & Sampling [C]**  
3 credits, Winter/Spring

An introduction to digital audio in the MIDI environment. This course continues MIDI sequencing, and integrates audio into the MIDI environment. Uses Roland sound modules, Fatar keyboard controllers, Behrenger mixers, and other common production software/hardware. Prerequisite: Pass MUS-142.

**MUS-144 Introduction To Electronic Music III: Digital Audio [C]**  
3 credits, 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-142 & 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-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, film makers, and New Media Artists. How to protect your intellectual property and benefit from your rights as a copyright owner.

**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, Fall/Winter/Spring

Introduction to the basic techniques and tools used in live sound engineering and mixing. Areas of study include set up, signal path, microphone applications, hardware, and outboard gear.

**MUS-189 Performance & Repertoire**  
1 credit, Fall/Winter/Spring

A performance forum required for all students studying privately 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-201 Music Literature: Greek-Renaissance**

4 credits, not offered every year

For nonmajors. Emphasis on cultivating understanding of music through study of elements, forms, and historical styles. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**MUS-202 Music Literature: Baroque-Classical**

4 credits, Fall

For nonmajors. Emphasis on cultivating understanding of music through study of elements, forms, and historical styles. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**MUS-203 Music Literature: Romantic-the 20th Century**

4 credits, not offered every year

For nonmajors. Emphasis on cultivating understanding of music through study of elements, forms, and historical styles. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**MUS-204 Music Literature: American Folk Music**

4 credits, not offered every year

For nonmajors. Emphasis on cultivating understanding of music through study of elements, forms, and historical styles. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**MUS-205 Music Literature: History of Jazz**

4 credits, Winter

For nonmajors. Emphasis on cultivating understanding of music through a study of elements, forms, and historical styles. Recommended: 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 nonmajors. Emphasis on cultivating understanding of music through study of elements, forms, and historical styles. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**MUS-211 Music Theory II**  
3 credits, Fall

Advanced study of the chromatic materials and structure of tonal music. Required for second-year music majors. Recommended: Placement in MTH-111, RD-115; pass WR-095 or placement in WR-121. Corequisites: MUS-211L, MUS-214 & MUS-224. Prerequisites: Pass MUS-113, pass MUS-113L, pass MUS-116 & pass MUS-129.

**MUS-211L MIDI Lab [C]**  
0 credit, Fall

Advanced use of Finale (music notation software) and basic use of QuarkXPress (desktop publishing software) on Macintosh computers. Required for second-year music majors. Corequisites: MUS-211, MUS-214 & MUS-224. Prerequisite: Pass MUS-113L.

**MUS-212 Music Theory II**  
3 credits, Winter

Advanced study of the chromatic material and structure of tonal music. Required for second-year music majors. Corequisites: MUS-212L, MUS-215 & MUS-225. Prerequisite: Pass MUS-211L & pass MUS-211.

**MUS-212L MIDI Lab [C]**  
0 credit, Winter

Advanced use of Finale (music notation software) and basic use of QuarkXPress (desktop publishing software) on Macintosh computers. Required for second-year music majors. Corequisites: MUS-215, MUS-225 & MUS-212. Prerequisite: Pass MUS-211L.

**MUS-213 Music Theory II**  
3 credits, Spring

Advanced study of the chromatic material and structure of tonal music. Required for second-year music majors. Corequisites: MUS-213L, MUS-216 & MUS-226. Prerequisites: Pass MUS-212L & pass MUS-212.

**MUS-213L MIDI Lab [C]**  
0 credit, Spring

Advanced use of Finale (music notation software) and basic use of QuarkXPress (desktop publishing software) on Macintosh computers. Required for second-year music majors. Corequisites: MUS-213, MUS-216 & MUS-226. 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. Corequisites: MUS-211, MUS-211L & MUS-224. 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. Corequisites: MUS-212, MUS-212L & MUS-225. 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. Corequisites: MUS-213, MUS-213L & MUS-226. 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. Corequisites: MUS-211, MUS-211L & MUS-214. 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. Corequisites: MUS-212, MUS-212L & MUS-215. 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. Corequisites: MUS-213, MUS-213L & MUS-216. Prerequisite: Pass MUS-225.

**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, pass MUS-140 & pass MUS-142.

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**NUR**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

**Nursing****NUR-090 Nursing Assistant I**  
7 credits, Fall/Winter/Spring/Summer

Prepare the student to perform routine nursing assistant tasks to clients in the acute care setting, sub-acute care setting and in the community. The Oregon State Board of Nursing requires 75 hours of didactic and skills lab instruction. May not be challenged. Restricted: Instructor consent.

**NUR-090C Nursing Assistant I Clinical**  
0 credit, Fall/Winter/Spring/Summer

Perform routine nursing assistant tasks to clients in hospitals, long-term and skilled care facilities, and in the community. The Oregon State Board of Nursing requires 75 hours of clinical practicum. May not be challenged. Restricted: Instructor consent.

**NUR-101 Nursing I**  
4 credits, Fall

Introductory course for the Nursing Program. Presents concepts, principles and skills, while emphasizing the nursing process and critical thinking skills. Studies the care of clients with integumentary, sensory and mobility problems, stressing roles and responsibilities. May not be challenged. Limited to admitted nursing students. Corequisite: NUR-112.

**NUR-101C Nursing I Clinical**  
4 credits, Fall

Clinical application of NUR-101 content.

**NUR-102 Nursing II**  
4 credits, Winter

Covers the problems and needs of clients with respiratory, cardiovascular and endocrine disorders. May not be challenged. Limited to admitted nursing students. Prerequisites: Pass NUR-101 pass PHC-211, all with a "C" or better. Corequisite: NUR-113.

**NUR-102C Nursing II Clinical**  
4 credits, Winter

Clinical application of NUR-101 and NUR-102 content.

**NUR-103 Nursing III**  
4 credits, Spring

Examines nursing care of the peri-operative client as well as clients with gastrointestinal and endocrine disorders as well as cancer. Principles of client teaching/learning are also addressed. May not be challenged. Limited to admitted nursing students. Prerequisites: Pass NUR-102 & pass PHC-212, all with a "C" or better. Corequisite: NUR-114.

**NUR-103C Nursing III Clinical**  
4 credits, Spring

Clinical application of NUR-101, NUR-102 and NUR-103 content.

**NUR-112 Discipline of Professional Nursing I**  
1 credit, Fall

First course in the 6-term series of 1 credit hour courses. Therapeutic and non-therapeutic communication styles are addressed as well as professional boundaries, stressors/coping mechanisms, work styles and values clarification. Group roles and principles will be introduced. Limited to admitted nursing students. Corequisite: NUR-101.

**NUR-113 Discipline of Professional Nursing II**  
1 credit, Winter

Second course in the 6-term series of 1 credit hour courses. Critical thinking skills are introduced as well as concepts involving conflict management/resolution, cultural competence, teaching/learning styles and ethical issues surrounding client and/or nurse's rights in the delivery of healthcare. Prerequisite: Pass NUR-112. Corequisite: NUR-102.

**NUR-114 Discipline of Professional Nursing III**  
1 credit, Spring

Third course in the 6-term series of 1 credit hour courses. Focus of this course is the student's awareness and knowledge of the professional accreditation of hospitals and other healthcare related environments, anger management and the art of negotiation, delegation techniques, as well as substance abuse in healthcare and the nurse at risk. Prerequisite: Pass NUR-113. Corequisite: NUR-103.

**NUR-160 Fluid and Electrolytes**  
2 credits, not offered every year

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-201 Nursing IV**  
4 credits, Fall

Theoretical and practical application of nursing concepts to the care of clients. Includes nursing care of the childbearing family, clients with gynecological problems, and selected medical and surgical conditions of children. NUR-201/202/203 must be taken in order. May not be challenged. Limited to admitted nursing students. Prerequisite: Pass NUR-103 with a "C" or better. Corequisite: NUR-212.

**NUR-201C Nursing IV Clinical**  
6 credits, Fall

Clinical application of first year theory, skills and NUR-201 content.

**NUR-202 Nursing V**  
4 credits, Winter

Theoretical and practical application related to the care of clients with psychiatric disorders. Care of clients with advanced cardiac and respiratory disorders will also be addressed as well as those with multi-organ dysfunction syndrome. May not be challenged. Limited to admitted nursing students. Prerequisite: Pass NUR-201 with a "C" or better. Corequisite: NUR-213.

**NUR-202C Nursing V Clinical**  
6 credits, Winter

Clinical application of previous and current program content.

**NUR-203 Nursing VI**  
4 credits, Spring

Theoretical and practical applications of nursing concepts related to the care of clients with neurological and hematological disorders. Client care management and community health concepts will also be addressed. May not be challenged. Limited to admitted nursing students. Prerequisite: Pass NUR-202 with a "C" or better. Corequisite: NUR-214.

**NUR-203C Nursing VI Clinical**  
6 credits, Spring

Precepted clinical experience allowing the student to apply previous and current program content.

**NUR-212 Discipline of Professional Nursing IV**  
1 credit, Fall

Fourth course in the 6-term series of 1 credit hour courses. Guiding principles and communication skills required for problem-solving, decision making and planned change regarding ethical issues in healthcare. Prerequisite: Pass NUR-114. Corequisite: NUR-201.

**NUR-213 Discipline of Professional Nursing V**  
1 credit, Winter

Fifth course in the 6-term series of 1 credit hour courses. This course focuses on the student's transition from a member of the public to a member of the nursing profession. Principles of resume construction, interview techniques and emotional intelligence in relation to job stress will be addressed. Prerequisite: Pass NUR-212. Corequisite: NUR-202.

**NUR-214 Discipline of Professional Nursing VI**  
1 credit, Spring

Sixth course in the 6-term series of 1 credit hour courses. This course focuses on healthcare finances and budgetary concerns, death and dying, legal/political/social issues in nursing, and assertiveness in patient advocacy. Prerequisite: Pass NUR-213. Corequisite: NUR-203.

**NUR-217 EKG Interpretation**  
1 credit, Spring

Four-week course focuses on developing skills in arrhythmia recognition and interpretation. Overview of cardiac A & P, and electro-physiology. Recommended for graduating nurses or practicing registered nurses who desire to increase their knowledge in EKG analysis.

**NUR-288 Physical Assessment**  
3 credits, not offered every year

Focuses on the role and responsibility of the professional nurse to assess the health status of individuals. Complete health history and systematic physical assessment in a laboratory setting. Restricted: Registered nurses and nursing students.

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**OS**

Courses with this prefix will not transfer with credit to a four-year institution.

**Study Skills**

See also English as a Second Language (ESL), Study Skills (EL).

**OS-010 Study Skills/Student Athletes**  
1-3 credits, Fall

Learning strategies for college targeted for student athletes. Explores academic strengths and weaknesses, tips for student success, and study skills.

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**OST**

Courses with this prefix may not transfer with credit to a four-year institution.

**Occupational Skills Training****OST-180 Occupational Skills Training Program**

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.

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**PE****Physical Education****PE-131 Introduction to Physical Education Health & Recreation**  
3 credits, Spring, every other year

Provides overview of the profession. Examines professional orientation, philosophy, performance objectives, personal qualifications, professional organizations and publications, and job opportunities. Recommended: Pass WR-095 or placement in WR-121.

**PE-185 Physical Education**  
1 credit, Fall/Winter/Spring

Activities may include badminton, basketball, conditioning, aerobic dance (both regular and step) modern dance, ballet, tap and jazz dance, self defense, tai chi, soccer, golf, jogging, karate, mountaineering, horseback riding, racquetball, exercise and relaxation, tennis, skiing (downhill and cross country) softball, swimming, volleyball, and weight training. Current physical examination before enrolling in a physical education course is recommended.

**PE-260 Care/Prevention of Athletic Injuries**  
2 credits, Winter/Spring

Care and prevention of athletic injuries. Taping techniques and rehabilitation methods of injury will be discussed and practiced.

**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-194/PE-294 Professional Activities**  
1-2 credits, Fall/Winter/Spring

For Physical Education majors and minors. Basic skills, methods and techniques of teaching physical education. Activities offered are: basketball/volleyball, fundamentals of movement, field games, conditioning, tennis/badminton, or track and field.

**PE-294 Philosophy of Coaching**  
2 credits, Fall/Winter/Spring

This course is designed to enhance the leadership, teaching, and management skills of coaches as they relate to 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**

See also Technical Physics (TPH).

**PH-104 Descriptive Astronomy**  
4 credits, Winter

Survey of astronomy for non-science majors. Historical and cultural context of discoveries concerning planets, stars, the solar system, stellar evolution, star clusters, galaxies, and cosmology. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**PH-121 General Astronomy**  
4 credits, Fall

Discusses the history of astronomy, the earth and its moon, and the other planets in our solar system, along with asteroids, meteors, and comets. Also offered as an online course. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121; placement in MTH-105 or MTH-111.

**PH-122 General Astronomy**  
4 credits, Winter

Discusses the properties of our sun and other stars, and stellar evolution. Also offered as an online course. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121; placement in MTH-105 or MTH-111. Prerequisite: Pass PH-121.

**PH-123 General Astronomy**  
4 credits, Spring

Discusses star clusters, the properties of our own galaxy and the other galaxies, and cosmology. Also offered as an online course. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121; pass MTH-095 or placement in MTH-105 or MTH-111. Prerequisite: Pass PH-122.

**PH-201 General Physics**  
5 credits, Fall

Units and vectors, kinematics, forces, Newton's Laws of Motion, circular motion, work and energy, impulse and momentum, rotational motion. Prerequisite: Pass MTH-111.

**PH-202 General Physics**  
5 credits, Winter

Elasticity and simple harmonic motion, fluid statics and dynamics, heat energy and phase changes, heat transfer, kinetic theory of gases, waves and sound, wave interference, electric forces and fields. Prerequisite: Pass PH-201.

**PH-203 General Physics**  
5 credits, Spring

Electrical energy and voltage, Ohm's Law and DC circuits, magnetic forces and fields, EM induction, reflection and refraction of light, particles and waves, special relativity. Prerequisite: Pass PH-202.

**PH-211 General Physics With Calculus**  
5 credits, Fall

Kinematics, Newton's Laws of Motion, gravitation, work and energy, impulse and momentum, rotational motion. Prerequisite: Pass MTH-251.

**PH-212 General Physics With Calculus**  
5 credits, Winter

Equilibrium, elasticity, fluids, oscillations, waves, sound, temperature, thermal expansion, Ideal Gas law, Kinetic Theory of Gases, heat, First Law of Thermodynamics, electric charge and field, Gauss' law. Prerequisite: Pass PH-211.

**PH-213 General Physics With Calculus**  
5 credits, Spring

Electric potential and energy, capacitance, Ohm's Law and DC circuits, magnetic field and forces, EM induction, Maxwell's equations, geometric optics, special relativity, and Planck's constant. Prerequisite: Pass PH-212.

**PH-280 Physics/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job experience and training related to physics. A weekly seminar class 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 at the employment site. Required: Instructor consent & a CWE seminar.

**PHC**

**Pharmacology**

**PHC-211 Pharmacology I**  
2 credits, Fall/Spring

Study of pharmacological properties, therapeutic and adverse effects on the body of cardiovascular, psychotherapeutic, autonomic nervous system drugs, and pain management. Prerequisites: BI-231 & BI-232 or admission to Nursing Program.

**PHC-212 Pharmacology II**  
2 credits, Winter/Spring

Study of pharmacological properties, therapeutic and adverse effects of drugs on the respiratory, gastrointestinal, and endocrine system. Covers hormones, anti-inflammatory, anti-microbial, anti-infection and neoplastic agents. Prerequisite: PHC-211.

**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. Also offered as a telecourse. Recommended: 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: 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: 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: 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: 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: 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: Placement in RD-115.

**PIE**

Courses with this prefix will not transfer with credit 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 student who needs one-on-one instruction in conversation, pronunciation, reading, grammar, writing, or GED preparation. Required: Instructor consent.

**PIE-022 Life Skills 1 & 2**

0 credit, Fall/Winter/Spring/Summer

Introduces the language necessary to function in day-to-day American society at the beginning levels; listening, speaking, grammar, 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 learn 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

High-intermediate level students learn and practice speaking and listening to improve their fluency in English for living and working situations. Required: Instructor consent.

**PIE-036 Communicating with Customers**  
3 credits, not offered every year

For upper-intermediate and advanced level non-native speakers of English who desire employment in retail and/or customer service. Teaches the basics of customer service. Students practice customer service skills. Required: Instructor consent.

**PIE-040 Beginning Grammar**

0 credit, Fall/Winter/Spring/Summer

Presentation and practice of the verb "to be", simple present verb tense, 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

Presentation and practice of simple present and simple past, present continuous, adverbs of frequency, and nouns in written and spoken English. Required: Instructor consent.

**PIE-042 Intermediate Grammar A**  
3 credits, Fall/Spring

Part A of a 2-part series. Presentation and practice of past tense, used to, future/be going to, comparative and superlative adjectives, and question forms in written and spoken English. Required: Instructor consent.

**PIE-043 Intermediate Grammar B**  
3 credits, Winter/Summer

Part B of a 2-part series. Presentation and practice of present perfect with time expressions, review of present continuous, introduction to past continuous, and modals of possibility, necessity and advice in written and spoken English. Required: Instructor consent.

**PIE-044 Upper Intermediate Grammar A**  
3 credits, Fall/Spring

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, and infinitives. Required: Instructor consent.

**PIE-047 Upper Intermediate Grammar B**  
3 credits, Winter/Summer

Part B of a 2-part series. Presentation and practice of adjective clauses, phrasal verbs, and passive voice in written and spoken English. Required: Instructor consent.

**PIE-049 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 will read short texts in order to improve reading skills, write a variety of sentences and put related sentences in paragraph form. Required: Instructor consent.

**PIE-050 Beginning Reading/Writing**

**0 credit, Fall/Winter/Spring/Summer**  
Designed for beginning level students who have limited knowledge of written English. Read and write short sentences and read short paragraphs, gain reading and scanning skills to use in everyday life and in the workplace. Required: Instructor consent.

**PIE-051 Upper Beginning Reading**

**0 credit, not offered every term**  
Designed for upper beginning level students who read at the sentence level. Students will read short texts in order to improve reading skills. Required: Instructor consent.

**PIE-052 Upper Beginning Writing**

**0 credit, Fall/Winter/Spring/Summer**  
Designed for upper beginning level students who write at the sentence level. Students will write a variety of sentences and put related sentences in paragraph form. Required: Instructor consent.

**PIE-053 Intermediate Reading/Writing**

**6 credits, Fall/Winter/Spring/Summer**  
Designed for intermediate level students. Focus on paragraph level writing with emphasis on 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**  
Designed for non-native speakers to develop the reading and writing skills needed to succeed in college and in everyday life. Introduction to multiple paragraph essays. Required: Instructor consent.

**PIE-056 Intermediate Reading**

**3 credits, not offered every term**  
Designed 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.

**PIE-057 Intermediate Writing**

**3 credits, Fall/Winter/Spring/Summer**  
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.

**PIE-058 Upper Intermediate Reading**

**3 credits, not offered every term**  
Designed for upper intermediate level ESL students who read beyond the paragraph level. Development of reading skills needed to succeed in college and in everyday life. Required: Instructor consent.

**PIE-059 Upper Intermediate Writing**

**3 credits, not offered every term**  
This course is designed for upper intermediate level ESL students to develop the writing skills needed to succeed in college and in everyday life. Introduction to multiple paragraph essays. Required: Instructor consent.

**PIE-060 Pronunciation**

**3 credits, not offered every term**  
Designed for 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.

**PIE-061 Introduction to Pronunciation**

**0 credit, not offered every year**  
For ESL students who want to sound more natural when speaking English. Focuses on increasing student awareness of the sounds of American English, improving intelligibility, and producing speech more fluently. Required: Instructor consent.

**PIE-062 Introduction to Idioms**

**0 credit, not offered every year**  
Introduction to common American idioms and slang in the context of conversation skills. For upper intermediate ESL students. Required: Instructor consent.

**PIE-063 American Idioms/Slang A**

**3 credits, not offered every term**  
Part A of a 2-part series of classes. Introduces common American idioms while practicing conversation skills. Required: Instructor consent.

**PIE-064 American Idioms/Slang B**

**3 credits, not offered every term**  
Part B of a 2-part series of classes. Introduces common American idioms while practicing conversation skills. Required: Instructor consent.

**PIE-067 Video and Conversation**

**0 credit, not offered every year**  
Intensifies intermediate/advanced ESL language skills in listening/speaking. Outside of class, view Crossroads Café video series, complete workbook exercises. In class, practice listening for specific information, participate in pair, small group, whole class 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. Required: Instructor consent.

**PIE-073 Writing Workshop**

**0 credit, not offered every year**  
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.

**PIE-081 Upper Intermediate Reading Skills**

**3 credits, not offered every year**  
Upper intermediate level students will practice the reading skills needed to succeed in college and in everyday life. Required: Instructor consent.

**PIE-084 Vocabulary Building**

**3 credits, not offered every term**  
Developes upper intermediate to advanced level students' vocabulary range and vocabulary acquisition skills. Required: Instructor consent.

**PIE-085 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. Includes familiarization with test components, test-taking techniques, strategies and computer skills. Required: Instructor consent.

**PIE-088 Skills for College Success**  
3 credits, not offered every year

For upper intermediate/advanced level PIE students who plan to attend a U.S. college or university. Increase knowledge of the culture/norms of the American classroom, college schedules/catalogs, analyze course materials, improve study/test-taking skills. 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, students' rights and responsibilities, learning styles, possible programs of study, matriculation procedures, and culture shock.

**PS****Political Science****PS-201 US Government: National Political Process**  
4 credits, Fall

Reviews the development of the U.S. Constitution, including democratic vs. republican theories of government, evolution of civil liberties, and principles of equal protection of the law. Examines present state of Congress, presidency, and Supreme Court. Note: Certain sections of PS-201 are offered as a telecourse. Recommended: Placement in RD-115.

**PS-202 US Government: National Government Institutions**  
4 credits, Winter

Examines American political parties, the role of money in politics and American political participation in general. Examines American domestic, economic and foreign policy. Note: Certain sections of PS-202 are offered as a telecourse. Recommended: Placement in RD-115.

**PS-203 US Government: State/Local Institutions**  
4 credits, Spring

Introduction to American state and local government, with emphasis on Oregon political behavior in states and communities. Recommended: Placement in RD-115.

**PS-204 Introduction to Comparative Politics**  
4 credits, Fall

Explores the various ideologies, institutions, and processes that constitute the nation-states that make up the world political system. Recommended: Placement in RD-115.

**PS-205 International Relations**  
4 credits, Spring

Analysis of relations among nations and the nature of international relations, including diplomacy, peacekeeping and war as instruments of foreign policy. Recommended: Placement in RD-115.

**PS-206 Introduction to Political Theory**  
4 credits, Winter

Introduces the fundamental political question: What is justice? Examines the writings of political thinkers, such as Plato, Marx, Locke, and Madison. Recommended: Placement in RD-115.

**PS-225 Introduction to Political Ideologies**  
4 credits, Fall

Focuses primarily on the various political ideologies that make up the ideological universe and critically examines such distinct ideologies as liberalism, conservatism, socialism, libertarianism, and fascism. Recommended: Placement in RD-115.

**PS-280 Political Science/CWE**  
2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of political science. 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 individual and group activities, lecture, and discussions with an emphasis on student participation. Recommended: Placement in RD-115.

**PSY-110 Psychology: An Overview**  
4 credits, Fall/Spring

A general introduction to the field of psychology. Explores a wide variety of topics. Offered only as a telecourse. Recommended: Placement in RD-115.

**PSY-200 Psychology As Natural Science**  
4 credits, Fall/Winter/Spring/Summer

Introduction to physiological psychology, the study of how the nervous system produces behavior and cognition. Further topics may include consciousness, sleep, memory, emotion, and language. Recommended: 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: Placement in RD-115.

**PSY-214 Introduction to Personality**  
4 credits, Winter

Explores the major theories about personality and personality assessment. Each of the major theories is examined for its contribution as well as its limitations in explaining the development or organization of personality. Recommended: 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: Placement in RD-115.

**PSY-216 Introduction to Social Psychology****4 credits, not offered every year**

Examines how we think about and interact with others. Includes perception, attributions, aggression, attitude formation, attraction, intimacy, social influence, and prejudice. Recommended: Placement in RD-115.

**PSY-218 Introduction to Experimental Psychology****4 credits, not offered every year**

Introduction to the principles of the scientific method in general and to the specific methods used in psychological research. Recommended for students pursuing a psychology major. Recommended: 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. May be taken in any order, but recommend PSY-200 precede PSY-219. Note: Certain sections of PSY-219 are offered as a telecourse. Recommended: Placement in RD-115.

**PSY-221 Introduction to Counseling****4 credits, Winter/Spring**

Provides an overview of the theoretical background for different approaches to counseling. Recommended: 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: Placement in RD-115.

**PSY-238 Psychology, Science, & Pseudoscience****4 credits, not offered every year**

Develops a critical and objective thinking; separates fact from fiction. Focuses on an understanding of science and the scientific method, information processing, psychological barriers to sound thinking, and paranormal claims. Recommended: Placement in RD-115.

**PSY-240 Interpersonal Awareness & Growth****4 credits, Fall/Winter**

Examines the dynamics of personality and explores techniques for overcoming self-defeating behaviors. Develops methods for making personal changes. Recommended: Placement in RD-115.

**PSY-280 Psychology/CWE****2-6 credits****Fall/Winter/Spring/Summer**

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/Winter/Spring**

The nature of myth and story, ancient religions, ideas of God, Judaism, and introduction to religious topics. Recommended: Placement in RD-115.

**R-102 Comparative Religions****4 credits, Fall/Winter/Spring**

Covers written and oral sources, Christianity, Islam, and includes the history and philosophy of other Western religious developments. Recommended: Placement in RD-115.

**R-103 Comparative Religions****4 credits, Fall/Winter/Spring**

The history, ideas, and philosophy of the Eastern religions including Buddhism, Hinduism, and Taoism. Recommended: Placement in RD-115.

**R-204 History of Christianity****4 credits, not offered every year**

Covers early Christianity, the Apostles, and the development of the New Testament. Also covers 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: Placement in RD-115.

**R-207 Judaic Studies****4 credits, not offered every year**

Covers topics related to ancient Judaism and the Bible. Examines Judaism through the Diaspora and Rabbinic Judaism, Middle Ages, Renaissance, and the Modern Era. Contemporary topics include the Holocaust, Arab-Israeli Wars, and other religious conflicts. Recommended: Placement in RD-115.

**R-210 World Religions****4 credits, Winter**

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. Offered only as a telecourse. Recommended: Placement in RD-115.

**R-211 History of the Old Testament****4 credits, not offered every year**

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: Placement in RD-115.

**R-212 History of the New Testament****4 credits, not offered every year**

Covers the first century influences on the New Testament texts, the life of Jesus, and the Pauline letters. Other early writings will be discussed. Recommended: Placement in RD-115.

**R-280 Religion/CWE****2-6 credits****Fall/Winter/Spring/Summer**

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 & OS).

**RD-080 Basic Reading Skills****1-3 credits, Fall/Winter/Spring**

Identifies individual reading strengths/weaknesses. Emphasizes basic reading skills in vocabulary, main idea, supporting detail, inferences, comprehension. 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: Placement in RD-090 or pass RD-080.

**RD-115 College Reading**  
3 credits, Fall/Winter/Spring

Emphasizes textbook comprehension, critical reading and thinking, vocabulary, and speed techniques for college-level reading. Prerequisite: Placement in RD-115 or pass RD-090.

**RE**

Courses with this prefix may not transfer with credit to a four-year institution.

**Real Estate****RE-118 Real Estate Appraisal I**  
3 credits, Fall

Real estate appraisal principles and methodologies used in the valuation of residential property.

**RE-228 Real Estate Appraisal II**  
3 credits, Winter

Application of the basic principles and methodologies of the valuation of residential property. A number of practical problems and a case study are reviewed. Prerequisite: Pass RE-118 or instructor consent.

**RE-238 Real Estate Appraisal III**  
3 credits, Spring

Income property appraisal principles and methodology. Prerequisite: Pass RE-228 or instructor consent.

**RE-239 Real Estate Appraisal IV**  
3 credits, not offered every year

Reinforces the student's ability to perform the appraisal of income-producing properties. Prerequisite: Pass RE-238 or instructor consent.

**RUS****Russian****RUS-101 First-Year Russian**  
4 credits, Fall

Introduces students to all basic language skills in Russian. Emphasis placed on oral skills, vocabulary, and grammar in patterns that imitate natural conversation. For students without a background in Russian. Conducted in Russian as much as possible. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**RUS-102 First-Year Russian**  
4 credits, Winter

Continues introduction of all basic language skills in Russian. Emphasis placed on developing oral skills and practicing vocabulary and grammar in patterns that imitate natural conversational exchanges. The course is conducted in Russian as much as possible. Prerequisite: Pass RUS-101 or instructor consent.

**RUS-103 First-Year Russian**  
4 credits, Spring

Continues introduction of all basic language skills in Russian. Emphasis placed on oral skills, vocabulary, and grammar in patterns that imitate natural conversation. Conducted in Russian as much as possible. Prerequisite: Pass RUS-102 or instructor consent.

**RUS-201 Second-Year Russian**  
4 credits, not offered every year

First of a three-term sequence in intermediate Russian which continues developing all of the basic language skills presented up through RUS-103. Course focuses on oral skills, vocabulary, and grammar in patterns that imitate natural conversation. Prerequisite: RUS-103 or instructor consent.

**RUS-202 Second-Year Russian**  
4 credits, not offered every year

Second of a three-term sequence in intermediate Russian which continues to focus on all of the language skills presented up through RUS-201. Prerequisite: RUS-201 or instructor consent.

**RUS-203 Second-Year Russian**  
4 credits, not offered every year

Third of a three-term sequence in intermediate Russian which continues to focus on all of the language skills presented up through RUS-202. Prerequisite: RUS-202 or instructor consent.

**SBM**

Courses with this prefix will not transfer with credit to a four-year institution.

**Small Business Management****SBM-020 Greenhouse/NxLevel™**  
0 credit, Fall/Spring

Comprehensive two-term program for the entrepreneur starting up any type of new business or taking a fresh look at an established business. Evening classes in seminar format, plus individual business counseling. Certificate awarded upon completion.

**SBM-021 Small Business Management I**  
0 credit, Fall

First year of a three-year program to help owners/managers of established businesses manage more effectively and achieve success. Monthly evening class meetings plus individual business counseling. Class topics emphasize financial analysis, goals, and communication.

**SBM-022 Small Business Management II**  
0 credit, Fall

Second-year topics emphasize marketing concepts and strategy. Monthly evening class meetings plus individual business counseling. Required: Instructor consent.

**SBM-023 Small Business Management III**  
0 credit, Fall

Third-year topics emphasize integrating strategies and business growth. Monthly evening class meetings plus individual business counseling. Certificate awarded upon completion. Required: Instructor consent.

**SM**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional 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. 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 ext. 3523.

### **SM-049 Semiconductor Operator I** 10 credits, not offered every term

Workplace readiness program focusing on basic skills required for entry-level operator jobs in the semiconductor and microelectronics industries. Specialized curriculum covers cleanroom process techniques, manufacture of silicon wafer and computer chips, and workplace readiness. Corequisite: SM-050.

### **SM-050 Semiconductor Operator II** 10 credits, not offered every term

A continuation of SM-049. Corequisite: SM-049.

### **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: 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: 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: SM-150.

### **SM-229 Vacuum Technology** 2 credits, Spring

Focuses on elementary theory and practice of vacuum equipment for microelectronics processing. Students study vacuum fundamentals, pumps and equipment used in vacuum systems. Recommended: SM-150.

### **SM-280 Electronics & Microelectronics/ CWE**

#### 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 & a CWE seminar.

**SOC**

## **Sociology**

### **SOC-204 Introduction to Sociology** 4 credits, Fall/Winter/Spring/Summer

Explores the social perspectives on the principles and processes of human social behavior. Examines concepts such as culture, socialization, social structure, roles, groups, organizations, and social stratification and introduces various sociological theories and research methodologies. Note: Certain sections of SOC-204 are offered as a telecourse. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

### **SOC-205 Social Stratification and Social System**

#### 4 credits, Fall/Winter/Spring

Examines issues of social structure and social stratification. Explores various social institutions (family, economy, education, health, religion and politics) and inequalities of race, class, gender and age as well as various theoretical perspectives. Note: Certain sections of SOC-205 are offered as a telecourse. Recommended: 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, work, economy, education, health and politics), stratification systems, social movements, and other elements of culture from a social change perspective. Various theories of social organization and sources social change will be examined. Certain sections of SOC-206 are offered as a telecourse. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

### **SOC-210 Marriage, Family & Intimate Relations**

#### 4 credits, not offered every term

This course will introduce students to the study of marriage, intimate relations, and family systems from the sociological viewpoint. Students will examine the ways in which race, class, gender, sexuality, community, and society influences patterns of courtship, intimate relations, marriage, and family, and explore the various challenges facing families today. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

### **SOC-223 Psycho-Social Aspects of Aging** 4 credits, Winter

An individual and societal perspective. Emphasis on normal versus abnormal aging, major life transitions, and providing services to the aged. Recommended: 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. Topics may include mental disorders, addiction, crime, discrimination, inequality, poverty, alienation, violence, environment, and energy. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SOC-230 Perspectives on Aging**  
4 credits, Fall

Overview of the field of gerontology. Characteristics of old people: Myths, stereotypes, and realities. Issues in aging: economic/political, physical/mental, and psychological/sociological. Networks of programs to serve the aged: governmental/families, and formal/informal. Recommended: Pass WR-095 or placement in WR-121.

**SOC-231 Health & Biological Aspects of Aging**  
4 credits, Winter

Normal biological aging and the effects of life-style and disease on functional ability. Use tools to screen older people for functional and nutritional status and develop plans to enhance independence. Recommended: Pass WR-095 or placement in WR-121.

**SOC-232 Encounters With Death**  
4 credits, Spring

Introduces current studies and programs in death, dying, grief, and bereavement. Activities and discussion designed to enable students to identify and face feelings about death. Recommended: Pass WR-095 or placement in WR-121.

**SOC-280 Sociology/CWE**  
2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job work experience in the field of sociology. Required: Instructor consent & a CWE seminar.

**SP****Speech****SP-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.

**SP-111 Public Speaking**  
4 credits, Fall/Winter/Spring/Summer

Practice in organization, research, and delivery of a variety of speeches. Note: Certain sections of SP-111 are offered online. Prerequisites: Placement in RD-115; pass WR-095 or placement in WR-121.

**SP-112 Persuasive Speaking**  
4 credits, Winter

Persuasive speaking, audience analysis, study of reasoning, and the basic theories of persuasion. Prerequisites: Placement in RD-115; pass WR-095 or placement in WR-121.

**SP-126 Communication Between Sexes**  
4 credits, Fall/Winter/Spring

Examines ways women and men are different and similar in their communication behaviors. Traditions, myths, social roles and current issues are discussed. Note: Certain sections of SP-126 are offered online. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SP-129 Oral Interpretation**  
4 credits, not offered every term

Oral interpretation of literature from the areas of prose, poetry and drama. Analyze specific literary works and communicate understanding through performance. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass SP-111 or instructor consent. Corequisites: SP-221 or SP-222 or SP-223.

**SP-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.

**SP-150 Competitive Platform Speaking**  
4 credits, not offered every term

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: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass SP-111 or instructor consent. Corequisites: SP-221 or SP-222 or SP-223.

**SP-167 Parliamentary Procedure**  
4 credits, not offered every term

The principles and practice of parliamentary procedure to develop skills in conducting business during meetings. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass SP-111 or instructor consent. Corequisites: SP-221 or SP-222 or SP-223.

**SP-211 Communication Theory**  
4 credits, not offered every year

Designed to enhance understanding of the theoretical assumptions and methods of inquiry in the study of human communication. Focuses on theories and empirical research across diverse contexts in communications. Recommended: Placement in RD-115. Prerequisites: Pass SP-100 or pass SP-111 & pass WR-121.

**SP-218 Interpersonal Communication**  
4 credits, not offered every term

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. Note: Certain sections of SP-218 are offered online. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SP-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: Placement in RD-115; pass WR-095 or placement in WR-121.

**SP-221 Speech & Debate: Forensics**  
1 credit, Fall

Practical application of public speaking skills in a variety of settings. Preparation for and participation in intercollegiate forensic activities. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass SP-111 or instructor consent. Corequisites: SP-129 or SP-150 or SP-167.

**SP-222 Speech & Debate: Forensics**  
1 credit, Winter

Practical application of public speaking skills in a variety of settings. Preparation for and participation in intercollegiate forensic activities. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass SP-111 or instructor consent. Corequisites: SP-129 or SP-150 or SP-167.

**SP-223 Speech & Debate: Forensics**  
1 credit, Spring

Practical application of public speaking skills in a variety of settings. Preparation for and participation in intercollegiate forensic activities. Prerequisite: Pass SP-111 or instructor consent. Corequisites: SP-129 or SP-150 or SP-167.

**SP-224 Speech & Debate: Forensics**  
1 credit, Fall

Practical application of public speaking skills in a variety of settings. Preparation for and participation in intercollegiate forensic activities. Prerequisite: Pass SP-111 or instructor consent. Corequisites: SP-229 or SP-250 or SP-267.

**SP-225 Speech & Debate: Forensics**  
1 credit, Winter

Practical application of public speaking skills in a variety of settings. Preparation for and participation in intercollegiate forensic activities. Prerequisite: Pass SP-111 or instructor consent. Corequisites: SP-229 or SP-250 or SP-267.

**SP-226 Speech & Debate: Forensics**  
1 credit, Spring

Practical application of public speaking skills in a variety of settings. Preparation for and participation in intercollegiate forensic activities. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass SP-111 or instructor consent. Corequisites: SP-229 or SP-250 or SP-267.

**SP-229 Oral Interpretation**  
4 credits, not offered every term

Oral interpretation of literature from the areas of prose, poetry and drama. Analyze specific literary works and communicate that understanding through performance. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass SP-111 or instructor consent. Corequisites: SP-224 or SP-225 or SP-226.

**SP-250 Competitive Platform Speaking**  
4 credits, not offered every term

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: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass SP-111 or instructor consent. Corequisites: SP-224 or SP-225 or SP-226.

**SP-267 Parliamentary Procedure**  
4 credits, not offered every term

The principles and practice of parliamentary procedure to develop skills in conducting business during meetings. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass SP-111 or instructor consent. Corequisites: SP-224 or SP-225 or SP-226.

**SP-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.

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**SPN****Spanish****FRL-100 Workplace Spanish**  
0-4 credits, Fall/Winter/Spring

Designed to teach specific occupational language and communication techniques. Introduces the specialized vocabulary, ability to communicate, and cultural awareness that employees need to successfully help their Spanish-speaking clientele. Emphasizes routine questions and answers, dialogues, direct commands, role-playing activities, and situations that resemble the use of Spanish in daily contact with Hispanic clients.

**SPN-101 First-Year Spanish**  
4 credits, Fall/Winter/Summer

First term 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. Offered summer term as an intensive 3-week course. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SPN-102 First-Year Spanish**  
4 credits, Summer/Winter

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. Offered summer term as intensive 3-week course. Prerequisite: Pass SPN-101 or instructor consent.

**SPN-103 First-Year Spanish**  
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. Offered summer term as intensive 3-week course. Prerequisite: Pass SPN-102 or instructor consent.

**SPN-120 Spanish for Health Professionals**  
3 credits, not offered every year

A course for students enrolled in the CCC nursing program and other health care professionals. Presents the specialized vocabulary needed to communicate with Spanish-speaking patients in health-care settings. Emphasizes personalized questions, grammatical exercises, dialogues, role-playing activities, and situations that resemble the use of Spanish in daily contact with patients. Prerequisite: SPN-101 or instructor consent.

**SPN-201 Second-Year Spanish**  
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**  
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**  
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 I**  
3 credits, Fall

Emphasis will be to continue to develop oral proficiency beyond that achieved by the end of second year 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 II**  
3 credits, Winter

Emphasis will be to continue to develop oral proficiency beyond that achieved by the end of second year 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 III**  
3 credits, Spring

Emphasis will be to continue to develop oral proficiency beyond that achieved by the end of second year 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-221 The Latin American Short Story**  
3 credits, not offered every year

Concentrates on reading and analyzing short stories of well-known Latin American authors. This is a one term course. It is geared toward students with experience in the spoken language who want to improve their reading and writing skills. Prerequisite: Pass SPN-203 or instructor consent.

**SPN-280 Spanish/CWE**  
2-6 credits**Fall/Winter/Spring/Summer**

Cooperative work experience. Provides students with on-the-job work experience in the field of Spanish. Required: Instructor consent & a CWE seminar.

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**SSC*****Social Science***  
***Inquiry*****SSC-150 The Columbia Basin: Watershed of the Great Northwest [C]**  
5 credits, Fall

The Columbia River watershed dominates the culture and economy of the Pacific Northwest, past, present, and future. This course explores the Columbia River Basin and its natural and human history. Includes field trips. Recommended: Placement in RD-115.

**SSC-151 The Columbia Basin: Watershed of the Great Northwest [C]**  
5 credits, Winter

The Columbia River is the largest river in the western United States. This course focuses on social issues of the management of the Columbia River Basin and its resources, with Portland as the metropolis of the watershed. Includes field trips.

**SSC-152 The Columbia Basin: Watershed of the Great Northwest [C]**  
5 credits, Spring

Issues and opportunities associated with the Columbia River watershed are of immediate importance. This course grapples with the future of the Columbia River Basin and the living organisms (including humans) dwelling in it. Includes field trips.

**SSC-160 Faith & Reason [C]**  
5 credits, Fall

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: Placement in RD-115.

**SSC-161 Faith & Reason [C]**  
5 credits, Winter

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.

**SSC-162 Faith & Reason [C]**  
5 credits, Spring

Introduction to classical philosophy, sacred texts, modern fiction, poetry, theology, evolutionary biology, and cosmology. Consideration of how personal concepts of faith and reason and institutions of science and religion, shape personal intellectual landscape.

**SSC-170 Metamorphoses [C]**  
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: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-171 Metamorphoses [C]**  
5 credits, not offered every year

Explores the effect of change on individuals and societies. Helps students evaluate the probable success of various means of promoting personal, social/cultural/political, and paradigmatic change through readings in Darwin, Marx, Gandhi, and Kafka. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-172 Metamorphoses [C]****5 credits, not offered every year**

Explores, analyzes, and evaluates the changes occurring now. Through independent study, peer instruction, website and digital portfolio development, students will examine the intersections of cultural, social, individual, religious, paradigmatic shifts happening in our own lifetimes. Recommended: Placement in RD-115; pass WR-095 placement in WR-121.

**SSC-180 Pathway to Sustainability****5 credits, not offered every year**

Can we create a more sustainable and just world? We will 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: Placement in RD-115.

**SSC-181 Pathway to Sustainability****5 credits, not offered every year**

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: Placement in RD-115.

**SSC-182 Pathway to Sustainability****5 credits, not offered every year**

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: Placement in RD-115.

**SSC-190 Human Nature****5 credits, not offered every year**

This course explores the complex connections between humans and nature and specifically asks, "What is human nature?" We will look at humans as biological organisms, language speakers, constructors and constructions of society and culture. Recommended: Placement in RD-115.

**SSC-191 Human Nature****5 credits, not offered every year**

Explores the complex connections between humans and nature. How have we described and represented nature to ourselves? How have humans over the course of time understood themselves and interacted with the natural world? Recommended: Placement in RD-115.

**SSC-192 Human Nature****5 credits, not offered every year**

Explores the complex connections between humans and nature. How have our understandings of nature and human nature changed? Do humans have unique responsibilities toward the natural world and, if so, what are they? Recommended: Placement in RD-115.

**SSC-212 Introduction to Chicano/a – Latino/a Studies****4 credits, not offered every term**

This interdisciplinary course surveys the socio-historical and political-economic experiences and cultural roots of Chicano/as and Latino/as in the United States. Topics include race, class, gender, language, immigration, various social institutions (education, family, religion), labor issues, rural/urban cultures, reform and social movements, cultural resistance and expressive culture. Recommended: Placement in WR-095.

**SSC-220 Modern War & American Popular Culture****4 credits, not offered every term**

Emphasizes observation, reflection, description, and critical thinking in order to gain a deeper understanding of the war in Vietnam and the Gulf War as seminal events represented in American popular culture. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-221 Science in American Popular Culture****4 credits, not offered every term**

Emphasizes observations, reflection, description, and critical thinking in order to gain a deeper understanding of the development of evolutionary theory, catastrophe theory, and historical disasters as represented in American popular culture. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-222 Civil Rights in American Popular Culture****4 credits, not offered every term**

Emphasizes observations, reflection, description, and critical thinking in order to gain a deeper understanding of civil rights history as represented in American popular culture and the ways in which the concepts of the civil rights have expanded. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-223 The Humanistic Tradition****4 credits, not offered every year**

Multi-disciplinary examination of major issues and topics from prehistory through the middle ages including perspectives from anthropology, history, art, literature, philosophy, religion, and science. Recommended: Placement in RD-115.

**SSC-224 The Humanistic Tradition****4 credits, not offered every year**

Multi-disciplinary examination of major issues and topics from the Renaissance Enlightenment from anthropology, history, art, literature, philosophy, religion, and science. Recommended: Placement in RD-115.

**SSC-225 The Humanistic Tradition****4 credits, not offered every year**

Multi-disciplinary examination of major issues and topics from 19<sup>th</sup> and 20<sup>th</sup> centuries including perspectives from anthropology, history, art, literature, philosophy, religion, and science. Recommended: Placement in RD-115.

**SSC-226 Science & Religion****4 credits, not offered every term**

Examines different aspects of science and religion and how scientific inquiry affects beliefs. Discusses historical development of astronomy, cosmology, physics, biology, and theology. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-227 Civil War & Psychology****4 credits, not offered every term**

Explores causes and effects of the Civil War, with a special emphasis on social, cultural, and economic factors. Analyzes the character and personality of civilian and military leaders of both the North and South. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-228 The Renaissance****4 credits, not offered every term**

Students gain insight into its influence on architecture, emphasis upon the development of individual personality, confidence in the power of formal education, belief in the citizen's participation in public life, and the rise of scientific inquiry. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-229 Latin American Studies****4 credits, not offered every term**

Survey and analysis of Latin America from pre-colonization to the modern era. Focuses on the political, social, cultural, and economic structure of Latin America. Discusses race and class relations, imperialism, revolution, neo-colonialism, and dependency theory. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-230 Gender & Material Culture****4 credits, not offered every term**

Provides an in-depth study of social and cultural significance of material culture as it applies to gender, within a historical context. Focuses on the material world of American society from the colonial era to the present. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-231 Engendered Identities****4 credits, not offered every term**

Examines the various perspectives on the development of gender identities and looks specifically at the ways in which concepts of femininity and masculinity have shaped cultural images, identities and experiences cross-culturally, globally and historically. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-232 Women in American History****4 credits, not offered every term**

Explores changing roles of women in American history. Emphasis on concepts of separate spheres, public/private realms, development of women's rights, role of women in reform and social movements, and women's roles and experiences across race and class. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-233 Electronic Culture [C]****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: Placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-234 Freedom, Privacy and Technology [C]****4 credits, not offered every term**

Investigation of how the development of computer based technologies is transforming the notion of privacy, anonymity, and individual freedom. Explores social impact of knowledge and data gathering techniques, surveillance, mass marketing, and commercialization of online world. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**TA****Theatre Arts****TA-101 Appreciation of Theatre Arts****4 credits, Fall**

Develop personal understanding of theatre by attending productions. Plays are reviewed and evaluated in written form and in group discussion. Recommended: Pass WR-095 or placement in WR-121.

**TA-102 Appreciation of Theatre Arts****4 credits, Winter**

Develop personal understanding of theatre by attending productions. Plays are reviewed and evaluated in written form and in group discussion. Recommended: Pass WR-095 or placement in WR-121.

**TA-103 Appreciation of Theatre Arts****4 credits, Spring**

Develop personal understanding of theatre by attending productions. Plays are reviewed and evaluated in written form and in group discussion. Recommended: Pass WR-095 or placement in WR-121.

**TA-111 Fundamentals of Technical Theatre****4 credits, Fall**

Study and practice in techniques of assembling various types of productions for presentation. Includes basic principles and techniques in stage design, construction and lighting.

**TA-112 Fundamentals of Technical Theatre****4 credits, Winter**

Study and practice in techniques of assembling various types of productions for presentation. Includes basic principles and techniques in stage design, construction and lighting.

**TA-113 Fundamentals of Technical Theatre****4 credits, Spring**

Study and practice in techniques of assembling various types of productions for presentation. Includes basic principles and techniques in stage design, construction and lighting.

**TA-141 Acting I****4 credits, Fall**

Studies the methods, techniques and theories of acting as an art form. Performance of lab exercises and excerpts from plays are the basic teaching approaches. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**TA-142 Acting II****4 credits, Winter**

Studies the methods, techniques and theories of acting as an art form. Performance of lab exercises and excerpts from plays are the basic teaching approaches. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121.

**TA-143 Acting III****4 credits, Spring**

Studies the methods, techniques, and theories of acting as an art form. Performance of lab exercises and excerpts from plays are the basic teaching approaches. Recommended: 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.

**TA-195 One-Act Plays****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. Required: Instructor consent.

**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: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-111, pass TA-112 & pass 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: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-111, pass TA-112 & pass 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: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-111, pass TA-112 & pass 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: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-141, pass TA-142 & pass 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 theater. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-141, pass TA-142 & pass TA-143.

**TA-243 Play Direction**  
4 credits, not offered every term

Theory, philosophy and practice of play directing. Casting and rehearsal of players, production organization, script analysis and scene building. Recommended: Placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-141, pass TA-142 & pass 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.

**TA-280 Theatre/CWE**  
2-6 credits, Fall/Winter/Spring

Cooperative work experience. 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 One-Act Plays**  
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. Required: Instructor consent.

**TPH**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

**Technical Physics**

See also Physics (PH).

**TPH-100 Technical Physics**  
3 credits, Winter

Designed to meet the needs of a technical program. Includes vectors, equations of motion, forces, work, energy, and power. Prerequisite: Pass MTH-080.

**WLD**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional 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 503-657-6958, ext. 3523.

**WLD-100 Welders' Print Reading I**  
3 credits, Winter

Provides instruction in reading and interpretation of sketches and prints common in welding practice. 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, and wire feed welding, oxy-acetylene and plasma arc cutting, bending, coloring and finishing techniques.

**WLD-103 Traditional Iron Working**  
2 credits, Fall/Winter/Spring

Course builds on the WLD-102 course. Designed for the creative metal worker. Provides support instruction related to metal sculpture, bending and welding dissimilar metals. Includes blacksmithing techniques and manual metal forming.

**WLD-111 Shielded Metal Arc Welding (STICK)**

4 or 8 credits, Fall

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-113 GMAW/FCAW Welding (Wirefeed)**

4 or 8 credits, Winter

Provides opportunity to acquire the knowledge and skills to perform fillet and groove welds in all positions with GMAW and FCAW. Oxy-fuel and plasma cutting also covered.

**WLD-115 GTAW Welding (TIG)**

4 or 8 credits, Spring

Provides opportunity to 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-150 Welding Processes**

4 credits, Fall/Winter/Spring/Summer

Oxy-acetylene welding, brazing, and cutting, stick welding, and wire feed, oxy-fuel and plasma cutting. Includes: safety, electrical fundamentals, routine maintenance, minor repair, 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 welding practice. Development of basic shop drawing views and projections, basic layout math review, ISO and AWS symbols, basic weld joints are covered. Recommended: WLD-100.

**WLD-211 Advanced SMAW Welding**

4 credits, Fall

Provides knowledge and skills to perform welds in all positions with a variety of different electrodes using the SMAW process. Groove welds on plate and pipe, industrial cutting processes, welding theory and procedures are included. Recommended: WLD-111.

**WLD-212 SMAW Pipe**

2 credits, Fall/Spring

This course will provide theory and practical instruction in open root V groove pipe welding using E6010 and E7018 electrodes. Oxyfuel pipe cutting will be included. Experience in SMAW is required. May be substituted for WLD-211 Advanced SMAW.

**WLD-213 Advanced GMAW/FCAW Welding**

4 credits, Winter

Provides knowledge and skills to perform welds in all positions using the GMAW and FCAW processes. Groove welds on plate, industrial-cutting processes, welding theory and procedures are included. Recommended: WLD-113.

**WLD-215 Advanced GTAW Welding**

4 credits, Spring

Provides knowledge and skills to perform welds in all positions on plain carbon steel, stainless steel and aluminum using the GTAW process. Groove welds on plate, industrial cutting processes, welding theory and procedures are included. Recommended: WLD-115

**WLD-250 Welding Fabrication I Beginning Project**

4 credits, Fall

Instruction in fabrication techniques including blueprint reading, layout, sketching, bills of material, job cost calculations, measuring, fitting, cutting and welding. A project will be assigned to each student.

**WLD-251 Welding Fabrication II Intermediate Project**

4 credits, Winter

Students will be assigned an intermediate fabrication project based on skills learned in WLD-250.

**WLD-252 Welding Fabrication III Advanced Project**

4 credits, Spring

Students will use techniques from Fabrication I and II to build an advanced project. Student will be responsible for all aspects of managing the project to completion.

**WLD-260A AWS Welder Certification, 1 Plate**

0 credit, Fall/Winter/Spring/Summer

Welder certification in accordance with AWS D1.1 in flat, horizontal, vertical, or overhead positions for students enrolled in any CCC welding course. A city card is available for an additional fee.

**WLD-260B AWS Welder Certification, 2 Plates or Pipe**

0 credit, Fall/Winter/Spring/Summer

Welder certification in any two positions, (flat, horizontal, vertical, overhead), in accordance with AWS D1.1 for students enrolled in any CCC welding course. A city card is available for an additional fee.

**WLD-260C AWS Welder Certification on Pipe**

0 credit, Fall/Winter/Spring/Summer

This is a 4 hour block of time for a student to take a welding certification test. The type of test will depend on the student's choice of welding process, joint design, and position. After welding, the pipe will be sent to a testing lab for bend or x-ray testing.

**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 or in preparation for taking their AWS certification test and is a requirement in the welding technology AAS degree. May be repeated. Required: prior welding experience.

**WLD-280 Welding Technology/CWE**

2-6 credits

Fall/Winter/Spring/Summer

Cooperative work experience. Practical experience in the welding trades. Coordination of instruction will occur with industry and the welding and cooperative work departments. Required: Instructor consent & a CWE seminar.

**WQT**

Courses with this prefix may not transfer with credit to a four-year institution unless applied as part of the 12 allowable professional technical credits for the AAOT or ASOT-Business.

## ***Water & Environmental Technology***

### **WQT-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 collection systems, preliminary and primary treatment, waste characteristics including organic removals, and solids profiles.

### **WQT-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.

### **WQT-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 WQT-010.

### **WQT-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 WQT-011.

### **WQT-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 WQT-020.

### **WQT-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 WQT-021.

### **WQT-110 Wastewater Operations I** 3 credits, Fall

Introduction to the fundamentals of wastewater operations. Includes collection systems, preliminary and primary treatment, waste characteristics including organic removals, and solids profiles. Prerequisite: Pass MTH-065. Corequisite: MTH-082.

### **WQT-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. Also offered as an online course. Prerequisite: Pass MTH-065. Corequisite: MTH-082.

### **WQT-120 Wastewater Operations II** 3 credits, Winter

Secondary wastewater treatment alternatives with municipal application. Fixed and suspended film systems and clarification process. Prerequisite: Pass WQT-110. Corequisite: MTH-082.

### **WQT-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. Also offered as an online course. Prerequisite: Pass WQT-111. Corequisite: MTH-082.

### **WQT-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.

### **WQT-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.

### **WQT-125 High Purity Water Production I** 3 credits, Winter

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, degassification, and microfiltration. Prerequisite: Pass CH-104. Corequisite: MTH-082.

### **WQT-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 WQT-120.

### **WQT-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 WQT-121.

### **WQT-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.

**WQT-134 Environmental Chemistry II**  
2 credits, Spring

Provides experience in test procedures required for wastewater treatment NPDES discharge permits and the drinking water industry. Prerequisite: Pass WQT-123.

**WQT-135 High Purity Water Production II**  
4 credits, Spring

Operation of equipment and unit processes in the production of high purity water. Emphasis on process equipment sizing and design, process control and troubleshooting. Prerequisite: Pass WQT-125.

**WQT-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: Inclusive CWE Seminar.

**WQT-241 Aquatic Microbiology**  
4 credits, Fall

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.

**WQT-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.

**WQT-245 Instrumentation and Control**  
4 credits, Fall

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.

**WQT-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.

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**WR****Writing****WR-080 Basic Writing Skills**  
3 credits, Fall/Winter/Spring

Intense grammar and punctuation review for native English speakers who wish to develop or improve basic writing skills. Prerequisite: Placement in WR-080.

**WR-090 Fundamentals of English**  
3 credits, Fall/Winter/Spring/Summer

Diagnostic and remedial approach to eliminating deficiencies in grammar, punctuation, and usage. Prerequisite: Placement in WR-090 or pass WR-080.

**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: Placement in RD-115. Prerequisite: Placement in WR-095 or pass WR-090.

**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. Note: Certain sections of WR-101 are offered online. Recommended: Placement in RD-115. Prerequisite: Placement in WR-121 or pass WR-095.

**WR-121 English Composition**  
3 credits, Fall/Winter/Spring/Summer

Methods of structure, content, and expository writing. Note: Certain sections of WR-121 are offered online. Recommended: Placement in RD-115. Prerequisite: Placement in WR-121 or pass WR-095.

**WR-122 English Composition**  
3 credits, Fall/Winter/Spring/Summer  
Style, logic, and argumentation. Note: Certain sections of WR-122 are offered online. Recommended: Placement in RD-115. Prerequisite: Pass WR-121.

**WR-123 English Composition**  
3 credits, Fall/Winter/Spring/Summer  
The research paper. Note: Certain sections of WR-123 are offered online. Recommended: Placement in RD-115. Prerequisite: Pass WR-121 & pass WR-122.

**WR-227 Technical Report Writing [C]**  
3 credits, Fall/Winter/Spring/Summer  
Introduction to report writing, with emphasis on materials gathered from the fields of medicine, government, criminal justice, business, engineering, technology, science, and public relations. Stresses organization, form, and style. Note: Certain section of WR-227 are offered online. Recommended: Placement in RD-115. Prerequisite: Pass WR-121 & pass WR-122.

**WR-240 Creative Writing: Nonfiction**  
4 credits, Fall/Spring

Techniques of creative nonfiction writing and the development of critical appreciation of the art of writing personal essays, memoirs, nature or science writing, and literary journalism. Recommended: 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: 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 creative writing and the development of critical appreciation of the art of writing poetry. Note: Certain sections of WR-242 are offered online. Recommended: 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: Placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121 or instructor consent.

**WR-244 Advanced Fiction Writing**  
4 credits, Spring

Skill and knowledge development for fiction writers with previous experience. Recommended: Placement in RD-115. Prerequisite: Pass WR-241 or instructor consent.

**WR-245 Advanced Poetry Writing**  
4 credits, Spring

Technique and knowledge development for poetry writers with previous experience. Recommended: Placement in RD-115. Prerequisite: Pass WR-242 or instructor consent.

**WR-246 Editing & Publishing [C]**  
4 credits, not offered every year

Develops editing and publishing skills of students with an interest in creative writing and/or literary journal design, layout, and publication. Includes the production of the campus literary magazine. Desktop publishing experience recommended but not required. Recommended: Placement in RD-115. Prerequisites: Pass WR-241 or pass WR-242 or pass WR-243 or pass WR-262 or instructor consent.

**WR-247 Advanced Playwriting**  
4 credits, not offered every term

Designed for students with previous writing experience who wish to learn advanced techniques of playwriting. Includes the art of dialogue and the elements of dramatic structure. Recommended: Placement in RD-115. Prerequisite: Pass WR-243 or instructor consent.

**WR-262 Introduction to Screenwriting**  
4 credits, Winter

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. Students will review movie scenes and compose their own scenes to be read and discussed in class. Recommended: Placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121 or instructor consent.

**WR-263 Advanced Screenwriting**  
4 credits, Spring

Continuation in the development of students' competency in the fundamentals of screenplay composition through the use of various writing exercises and workshop techniques. Recommended: Placement in RD-115. Prerequisite: Pass WR-262 or instructor consent.

**WR-264 Screenwriting & Production**  
4 credits, Spring

Explores screenplay editing, script breakdown and scheduling, dramatic interpretation of written work, shooting and lighting techniques, and editing. Prerequisites: Placement in RD-115; pass WR-095 or placement in WR-121 or instructor consent.

**WR-280 Writing/CWE**  
2-6 credits, Fall/Winter/Spring

Cooperative work experience. Provides students with on-the-job work experience in the field of writing. Required: Instructor consent & a CWE seminar.

---

**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 future. Topics: family, education, work, health care, sexuality, and political/economic status. Recommended: Placement in RD-115.

---

**Z****Zoology****Z-201 General Zoology**  
4 credits, not offered every year

Covers cellular and molecular basis of animal life including genetics, evolution, systematics, and protist diversity. Recommended: Pass MTH-095 or placement in MTH-105 or MTH-111; placement in RD-115; pass WR-095 or placement in WR-121.

**Z-202 General Zoology**  
4 credits, not offered every year

Covers the maintenance of the cellular environment, evolution of animal systems, and diversity of the less complex invertebrate animal phyla. Recommended: Pass MTH-095 or placement in MTH-105 or MTH-111; placement in RD-115; pass WR-095 or placement in WR-121.

**Z-203 General Zoology**  
4 credits, not offered every year

Covers diversity of the more complex invertebrate and vertebrate animal phyla. Includes animal behavior, distribution, ecology, and conservation. Recommended: Pass MTH-095 or placement in MTH-105 or MTH-111; placement in RD-115; pass WR-095 or placement in WR-121.

**Z-280 Zoology/CWE**  
2-6 credits**Fall/Winter/Spring/Summer**

Cooperative Work Experience. Provides students with on-the-job work experience in the field of Zoology. Required: Instructor consent & a CWE seminar.





*Smart Now...Smart Then.*

*Academic Regulations*

## Adding & Dropping Classes

- To officially add or drop a course you must file a request with the Registrar's Office via CougarTrax, by mail, fax, or in person. (Ceasing to attend class does not constitute official withdrawal.)
- Adding a course after the class has started requires the instructor's written consent and/or a signature on a registration form.
- Drops after the sixth week of the term (for full term courses) require the signature of the instructor and will appear on your transcript with a "W" in the grade column. In order to drop a course without responsibility for a grade, your registration request must be filed before the end of the sixth week of the term.
- No adding/dropping is accepted after the eighth week of the term for classes that are in progress.

## Administrative Withdraw

You may be administratively withdrawn from one or more of your classes under the following conditions:

1. If you did not attend the first class session and did not notify your instructor of your absence.
2. If you were unable to demonstrate completion of course prerequisite requirements.

Students withdrawn under these conditions will be notified by the Registrar's Office. *If you are using Financial Aid or Veterans benefits, you may owe a repayment.* Please check with the Student Financial Services Office for additional information regarding your enrollment status and entitlement to benefits.

## Attendance

You must be officially registered to attend class, and you are expected to attend the classes in which you're enrolled. If you do not attend your first class session, and do not contact your instructor before the first class session, you *may* be administratively withdrawn from the class to accommodate wait-listed students. If you're withdrawn from a class under this procedure, you'll be notified by the Registrar's Office.

### Absences

Absences during religious holidays when the college is open will be accepted if notification is received before class begins.

Absences due to participation in college-sponsored field trips, intercollegiate functions and other trips may be excused through prior arrangement with your instructors. *Financial aid programs have specific attendance requirements. Contact the Student Financial Services Office for more information, ext. 2422.*

## Wait List

You may be able to request a position on a class wait list if the class you want is full at the time of registration. Requests can be made via the Web, or in person. You will be enrolled should an opening become available in the course you have requested. Students are enrolled from the wait list on a first-come, first-served and eligibility basis. Certain conditions may affect the eligibility of those requesting a wait list placement. These conditions are as follows:

1. Wait list seat load capacity has been met.
2. There is a "hold" on your student record that restricts registration.
3. There are course restrictions in place such as "instructor consent."
4. You are already enrolled in another section of the same course.
5. There is a time conflict with the course you have selected.
6. You have reached the maximum number of credits allowed (20) without additional authorization.
7. Class has already begun.

### *Frequently-asked question:*

*How do I know which courses transfer?*

It is your responsibility to know the requirements of the college or university to which you intend to transfer and to meet those requirements. For assistance, see your faculty advisor or a staff member in the Advising & Counseling Center to help you create an educational plan to fit your program of study and the transfer requirements for the four-year institution where you plan to complete a bachelor's degree.

## College Credits

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 20 credits per term without approval from a counselor.

### 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.
10 through 99	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.*
1 through 8	Continuing education courses, workshops or seminars that carry no credit or application toward a degree and/or certificate.
9	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 in the Advising & Counseling Center to verify course eligibility towards degree/certificate requirements.

### Acceptance of Credit

Credits from regionally accredited institutions recognized by the Council for Higher Education Accreditation (CHEA) 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 course work reviewed for transfer credit at CCC, include official copies of your transcripts with your application for admission or ask the college you previously attended to send a copy of your official transcript to the CCC Registrar's Office.

### Credit by Examination (Challenge Exam)

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

- Certain courses have been approved for challenge (see the Advising & Counseling Center).

- You must be enrolled at CCC and complete a minimum of three credits during the term in which you challenge a course.
- Challenge exams need to be completed by the eighth week of the term. Credit from challenge exams completed after the eighth 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 the Enrollment Services Center or Advising & Counseling Center 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. The examination may be written, oral, performance or a combination. For more information call the Advising & Counseling Center, ext. 2213.

### 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. Notify your instructor of the number of credits you are pursuing.

You must register for the number of credits you expect to earn in that term.

## Grades

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
P	Pass, credit given, no grade points	N/A
N	No pass, no credit, no grade points	N/A
I	Incomplete, no credit, no grade points	N/A
X	Audit, no credit, no grade points	N/A
W	Withdrawn after sixth week of term, no credit, no grade points	N/A
UG	Unreported grade no credit, no grade points	N/A

### *Audit*

An Audit allows you to attend class without responsibility for a grade. Audit carries no credit and does not contribute toward full-time student status. Audited courses do not qualify for Veterans or Social Security benefits, Financial Aid and athletic eligibility. Registration, tuition, fees and attendance standards for audited courses are the same as for credit courses. To change your status from audit to credit, or from credit to audit, please talk with your instructor and make these changes through the registration process before the end of the eighth week of the term.

### *Calendar*

Clackamas Community College operates on the quarter system. Fall, winter and spring terms are 11 weeks in length and summer term classes are eight or 11 weeks in length. Credits as noted on transcripts are measured in quarter hours.

### *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.

### *Honors*

Students achieving a term GPA of 3.5 or better based on nine or more credits graded (A-F) will be placed on the CCC honor roll for fall, winter, or spring terms.

### *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 remain 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.

### *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 the Registrar's Office by the end of the eighth week of the term.

### *Repeating Courses*

You may repeat a course as many times as you choose. You must fill out a Repeated Course form in the Registrar's Office to request a recalculation of your GPA. A repeated course will reflect an "R" on your transcript. The grade (A, B, C, D, F) of your last attempt 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.

### *Satisfactory Academic Progress*

If you intend to register for six or more credits in a degree or certificate program, you are subject to standards of satisfactory academic progress.

The standards of academic progress are: completion of at least 50 percent of your enrolled credits (not including credits dropped or changed to audit), and a term GPA of 2.0 or greater. Failure to meet either standard will place you on alert status.

If you are on academic alert, you will be sent written notification of your status at the end of the term, including information on resources, tutoring and other options available to you. You must attend an educational planning session before the end of the next term of enrollment in order to draw up an educational plan for improving your academic work. This term will be called your academic alert term.

If you complete 50 percent of your courses and achieve a term GPA of 2.0 or greater during an academic alert term, but have a cumulative GPA less than 2.0, you may enroll for a second academic alert term. You must repeat the educational planning process.

If you do not complete 50 percent of your courses and/or do not achieve a term GPA of 2.0 or greater during an academic alert term, you will be prohibited from registering for college credit classes for one term (summer excluded). Upon re-enrollment, you must repeat the educational planning process.

If you enroll after a one-term restriction and still do not complete 50 percent of your courses and achieve a term GPA of 2.0 or greater during an alert term, you will be prohibited from registering for college credit classes. You may appeal your loss of registration privilege by writing to the Dean of Student Services. An appeals committee will inform you of the outcome within 10 working days of the receipt of the appeal.

Please note: There may be higher standards required for students who receive financial aid; are admitted to Medical Assistant, Clinical Lab Assistant, or Nursing programs; are international students; participate in college athletics; or who receive scholarships.

### Transcripts

Official transcripts of your coursework at CCC may be ordered in person, by written request or fax through the Registrar's Office. Official transcripts are \$5 each; unofficial transcripts are available by going to the Web at <http://www.clackamas.edu>

For more information call the Transcript Request Line, ext. 2480.

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

### Graduation

Students are encouraged to petition for graduation at least two terms prior to the term in which they expect to finish. Petitions for graduation may be obtained from the Enrollment Services Center, Advising & Counseling Center, Registrar's Office, or by going to the Web at <http://www.clackamas.edu>

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.

#### **Multiple Degrees/Certificates of Completion**

A student wishing to earn multiple associate degrees must complete 24 credit hours of college level coursework 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 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

## Personal Rights & Privileges

### Your Social Security Number

Providing your Social Security number is voluntary. OAR 581-41-460 authorizes Clackamas Community College to ask you to provide your number. Your Social Security number will be used for keeping records, doing research, aggregate reporting, extending credit and collecting debt. Please read the statement in the *Schedule of Classes* which describes how your number will be used. Providing your Social Security number means that you consent to the use of your number in the manner described.

### 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. If the challenge is not resolved with the custodian of records, 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 the Registrar's Office become the property of the College.*

### Release of Information

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

*Continued*

### *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
6. The following information may be released by the Dean of Enrollment Services 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.

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

You may restrict the release of directory information as mentioned above by submitting a Student Directory Restriction request form with the Registrar's 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.

### *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 Registrar's 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 colleges to disclose your directory information without consent. If you do not want this information released, you must submit a request with the Registrar's Office.

### *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 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.



*Smart Now...Smart Then.*

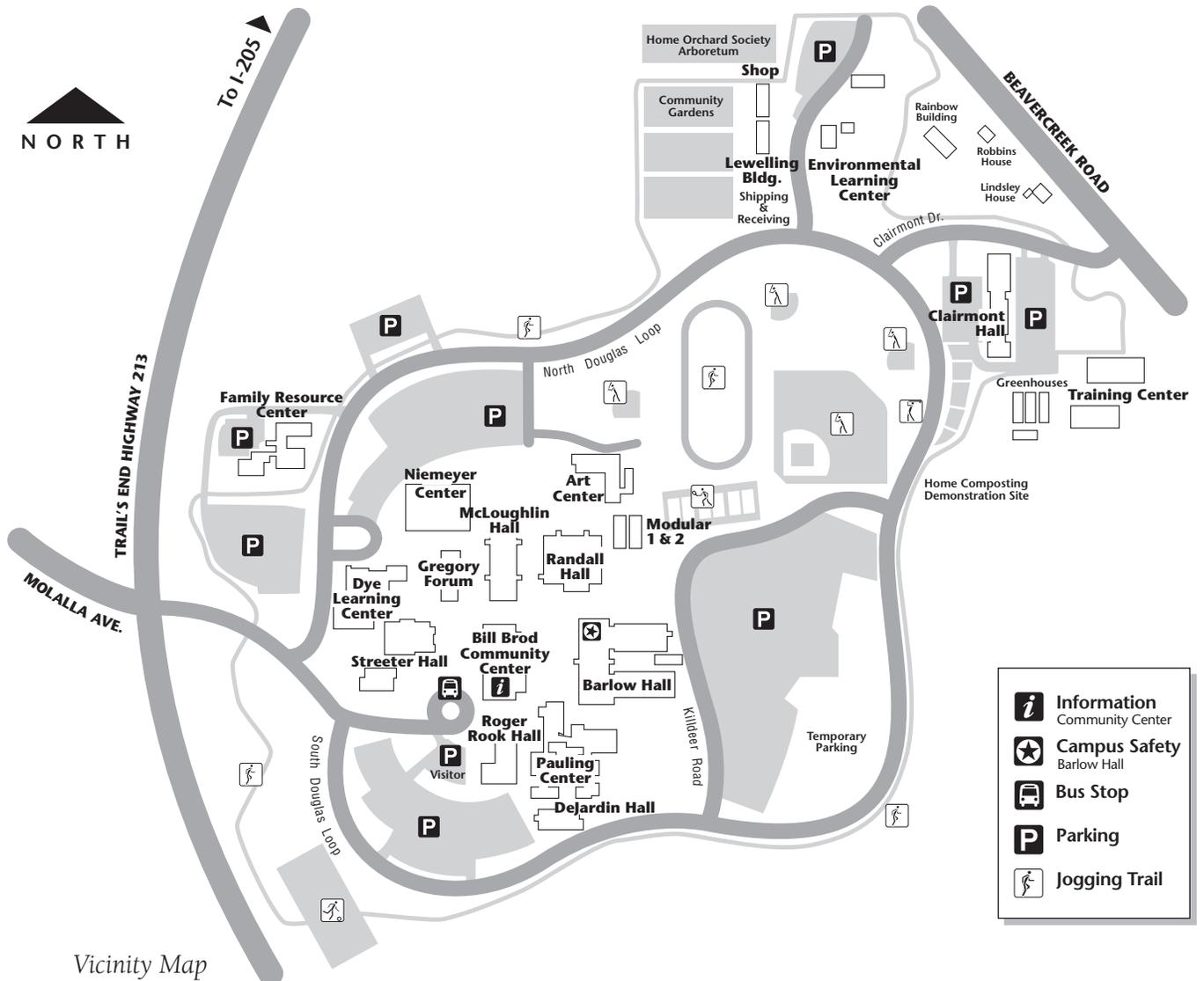
*Maps, Services, Activities, Special Programs*

## Maps

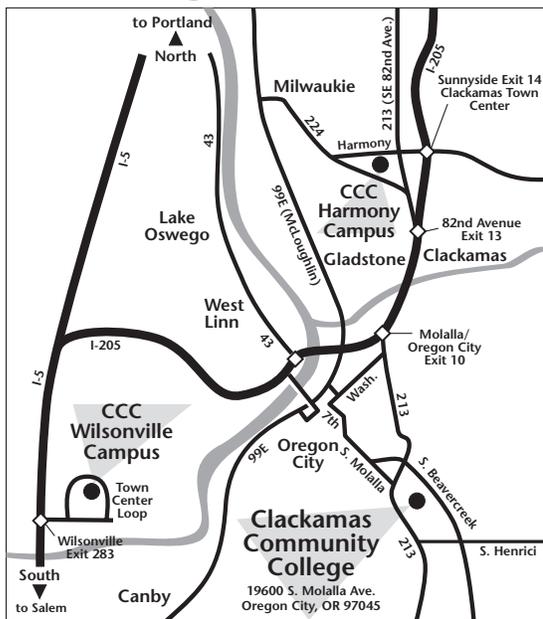
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INSTRUCTIONAL DEPARTMENT	BUILDING	INSTRUCTIONAL DEPARTMENT	BUILDING
<i>Apprenticeship/Building Construction</i> ...	Training Center A	<i>Foreign Language</i> .....	Barlow Hall, 2nd floor
<i>Art</i> .....	Art Center	<i>Health Sciences</i> .....	DeJardin Hall, 2nd Floor
<i>Automotive</i> .....	Barlow Hall, 2nd floor	<i>Horticulture</i> .....	Clairmont Hall
<i>Business</i> .....	McLoughlin Hall, 2nd floor	<i>Manufacturing</i> .....	Barlow Hall, 2nd floor
<i>Communication/Theatre Arts</i> .....	Niemeyer Center	<i>Mathematics</i> .....	Streeter Hall
<i>Computer Science</i> .....	Streeter Hall	<i>Music</i> .....	Niemeyer Center
<i>Community Education</i> .....	Harmony Campus*	<i>Occupational Skills Training</i> .....	Community Center
<i>Cooperative Work Experience</i> .....	Community Center	<i>Physical Education/Health</i> .....	Randall Hall, ground floor
<i>Criminal Justice</i> .....	Clairmont Hall	<i>Science</i> .....	Pauling Center
<i>Drafting</i> .....	Barlow Hall, 2nd floor	<i>Skills Development</i> .....	Dye Learning Resource Center
<i>Education &amp; Human Services</i> .....	Family Resource Center	<i>Small Business Center</i> .....	Harmony Campus*
<i>Employment Skills Training</i> .....	Community Center	<i>Social Science</i> .....	McLoughlin Hall, 2nd floor
<i>Engineering/Water Quality</i> .....	Pauling Center	<i>Welding</i> .....	Training Center B
<i>English</i> .....	Streeter Hall		
<i>English as a Second Language</i> .....	Dye Learning Resource Center		
<i>Fire Science (Wildland)</i> .....	Training Center A		

\* See vicinity map, next page.



Vicinity Map



## Clackamas Community College Campus Map

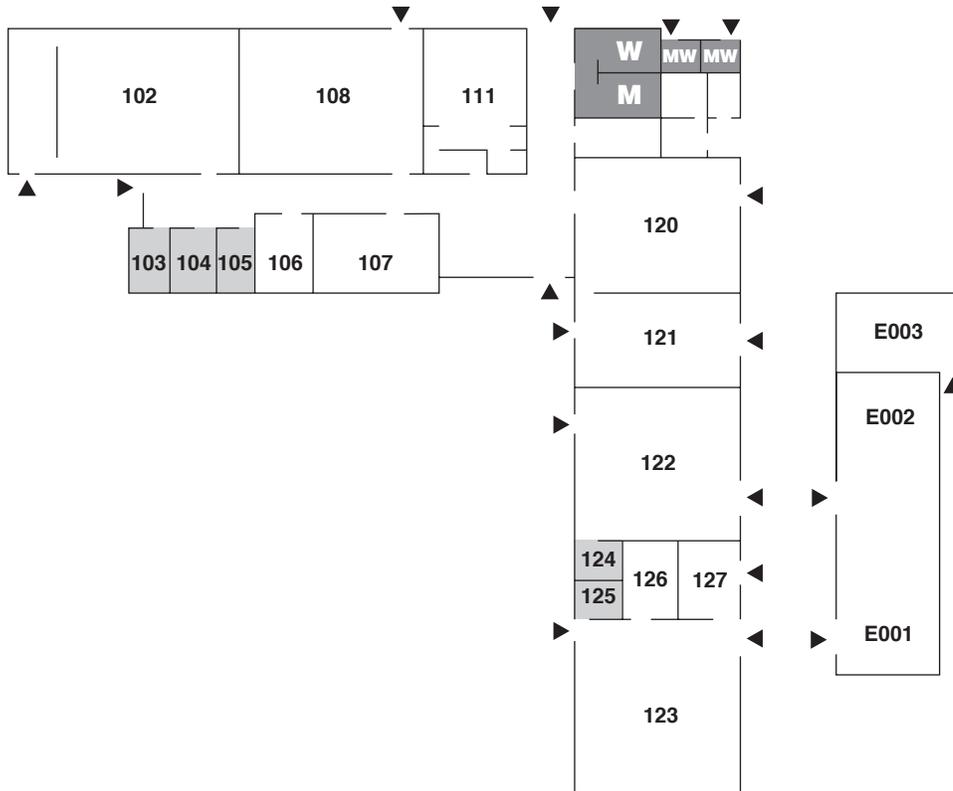
Clackamas Community College  
19600 South Molalla Avenue  
Oregon City, OR 97045-7998

CCC Harmony Campus  
7616 S.E. Harmony Road  
Milwaukie, OR 97222

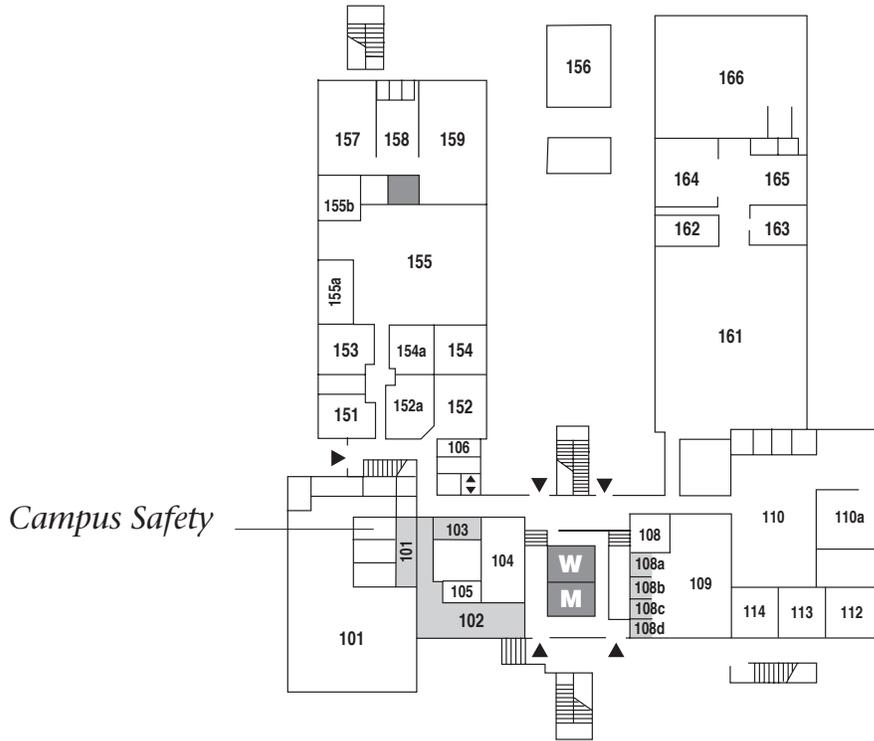
CCC Wilsonville Campus  
29353 Town Center Loop E  
Wilsonville, OR 97070

To reach any college office, call 503-657-6958 and dial the extension you want. (Hearing-impaired TTY/TDD 503-650-6649)

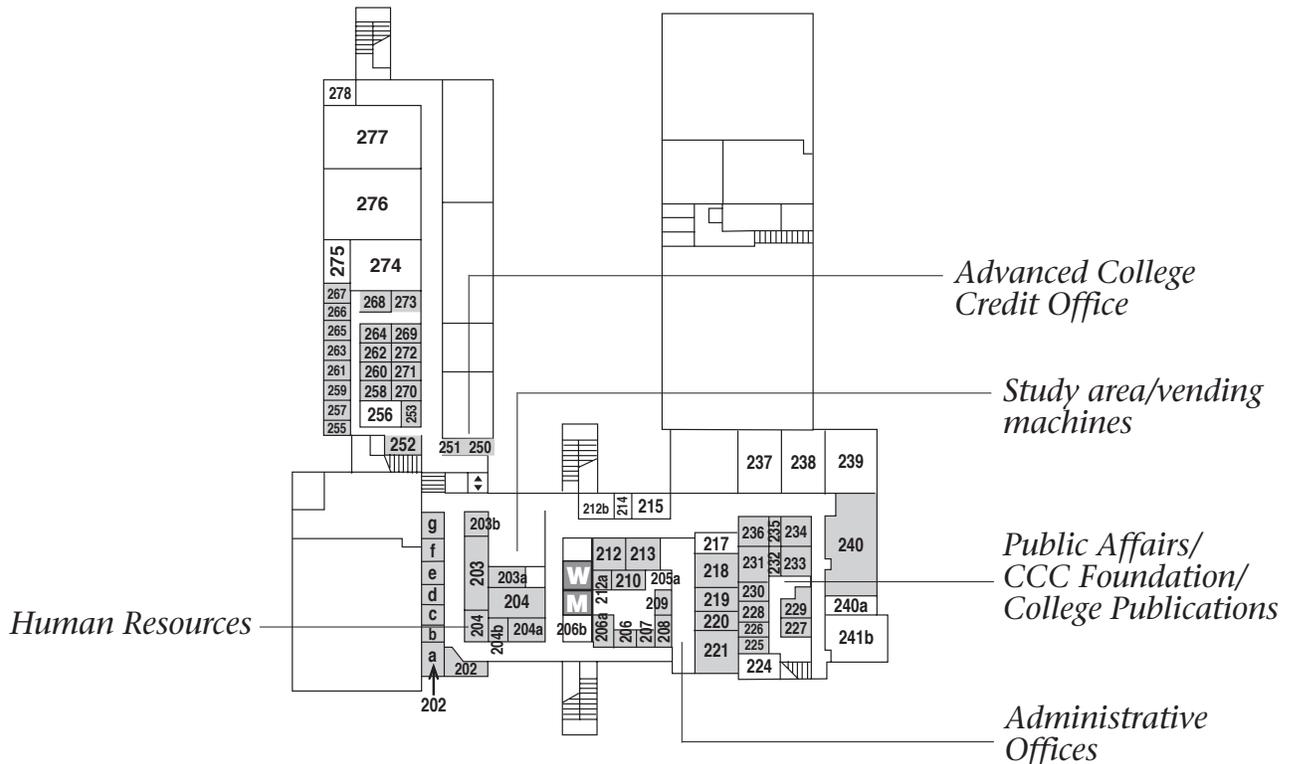
## *Art Center*



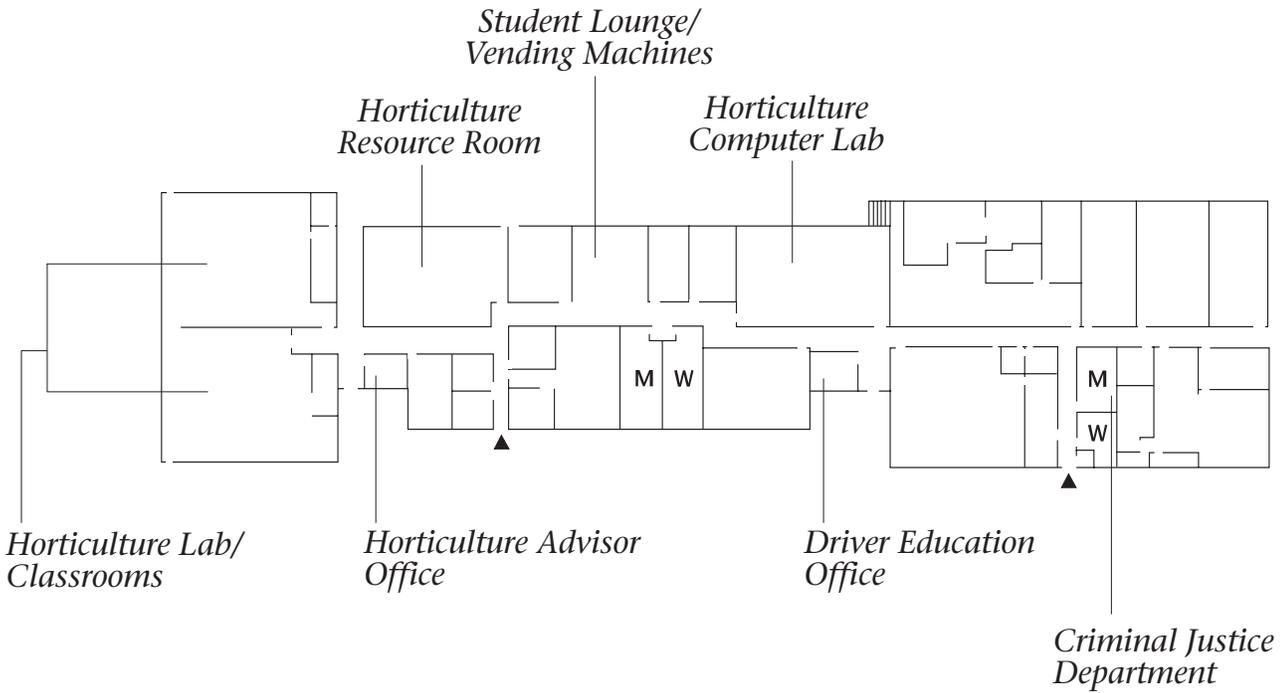
*Barlow Hall (1st floor)*



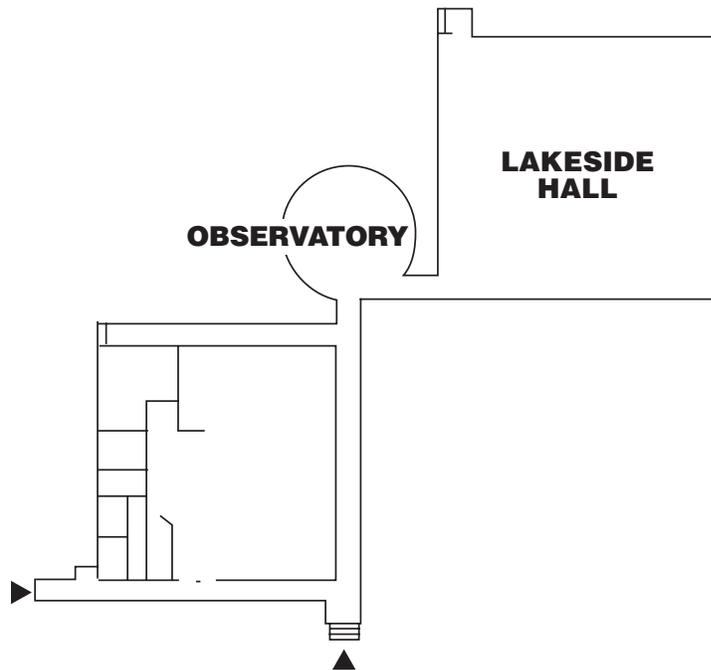
*Barlow Hall (2nd floor)*



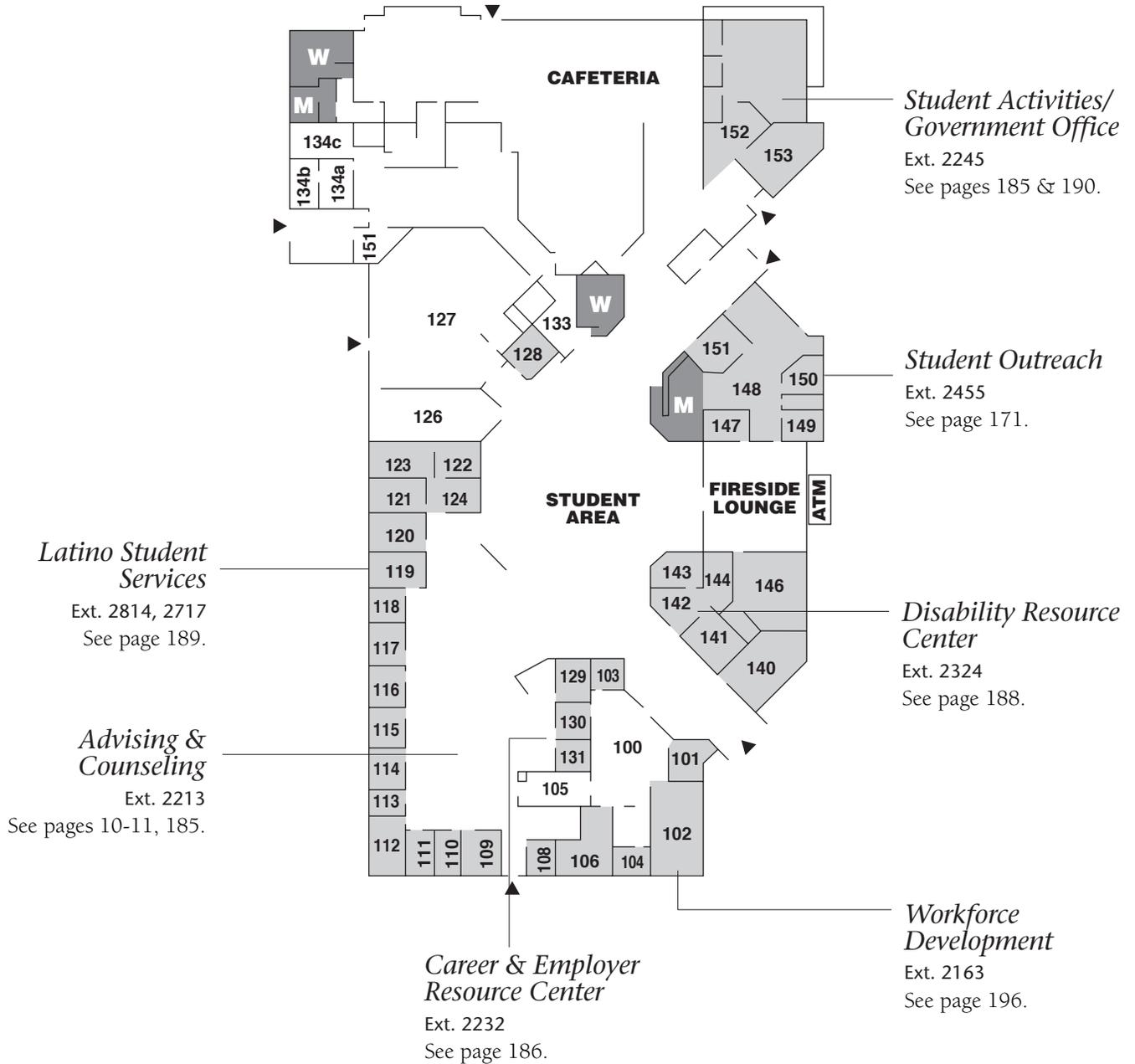
## Clairmont Hall



## John Inskeep Environmental Learning Center

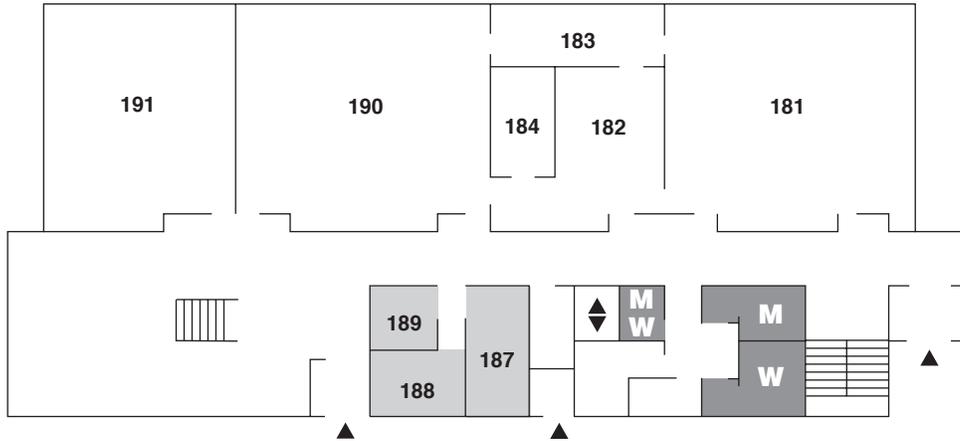


## Bill Brod Community Center



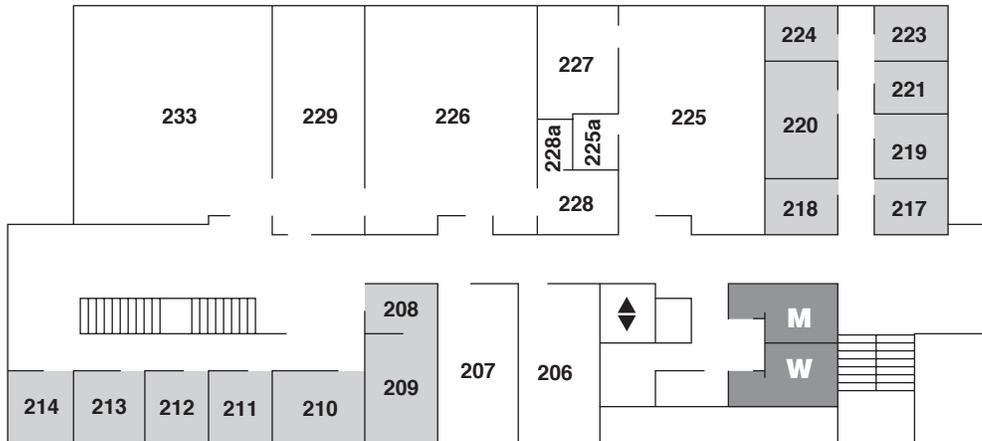
**Summer hours:**  
 No Friday or Saturday  
 hours during the day.  
 Call individual departments  
 for evening hours.

*DeJardin Hall (1st floor)*

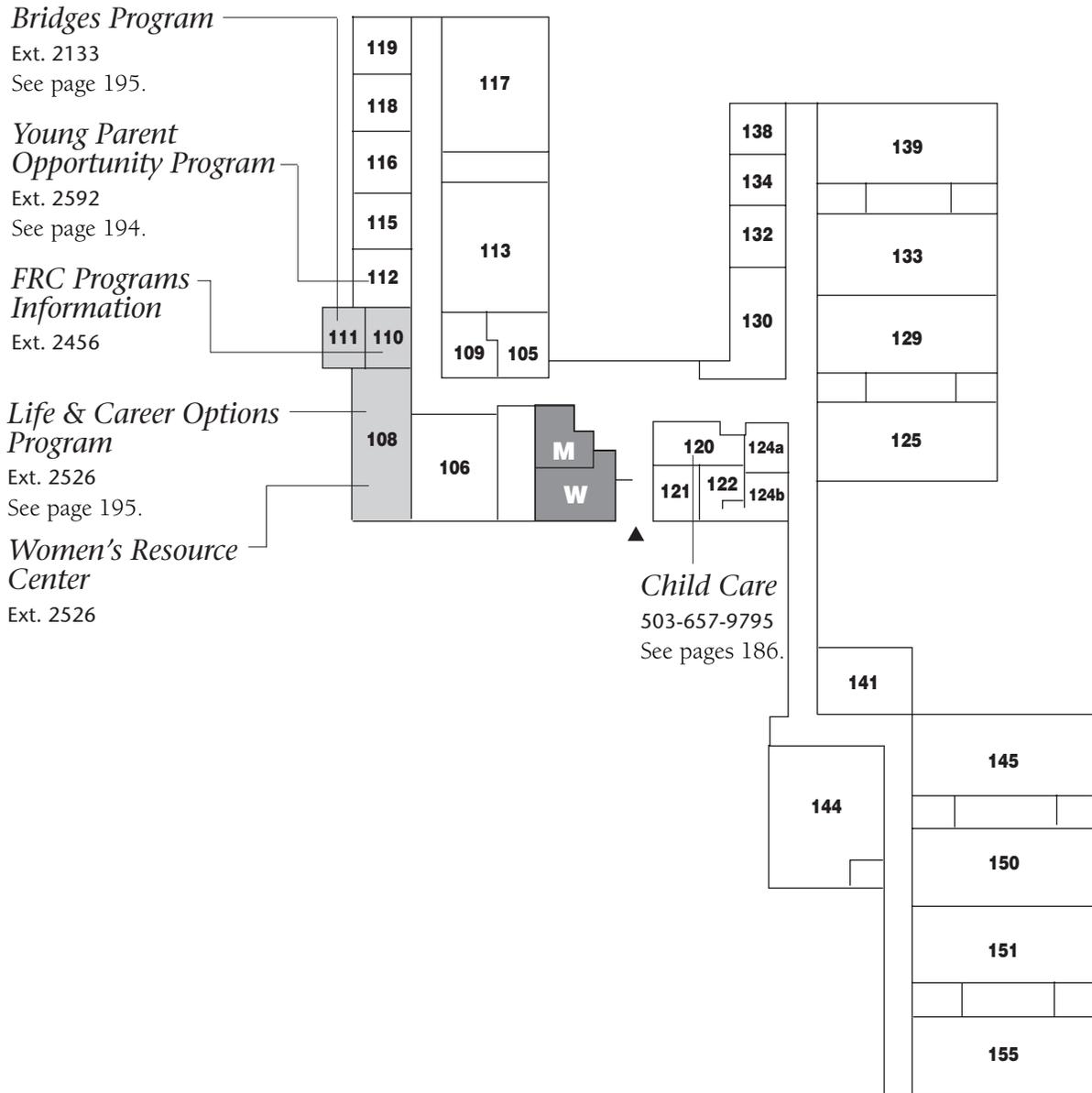


*Health Sciences*  
Ext. 2428

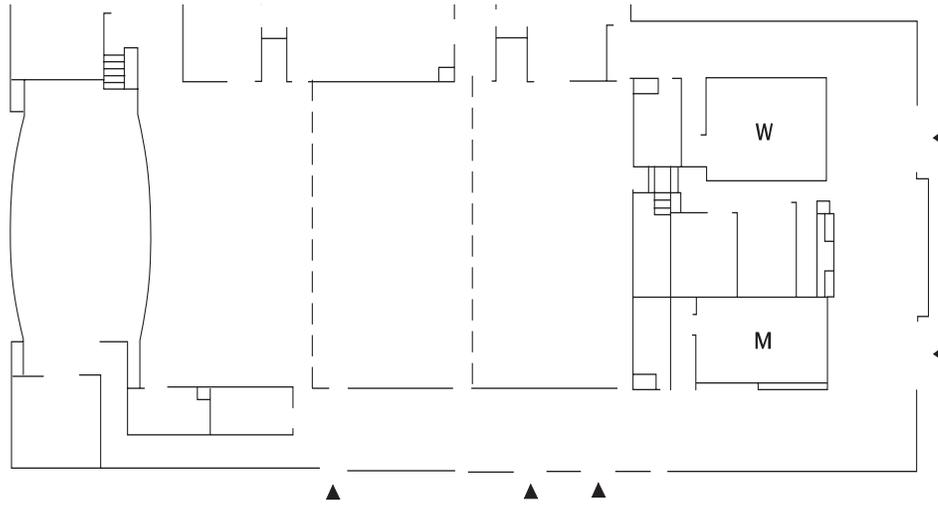
*DeJardin Hall (2nd floor)*



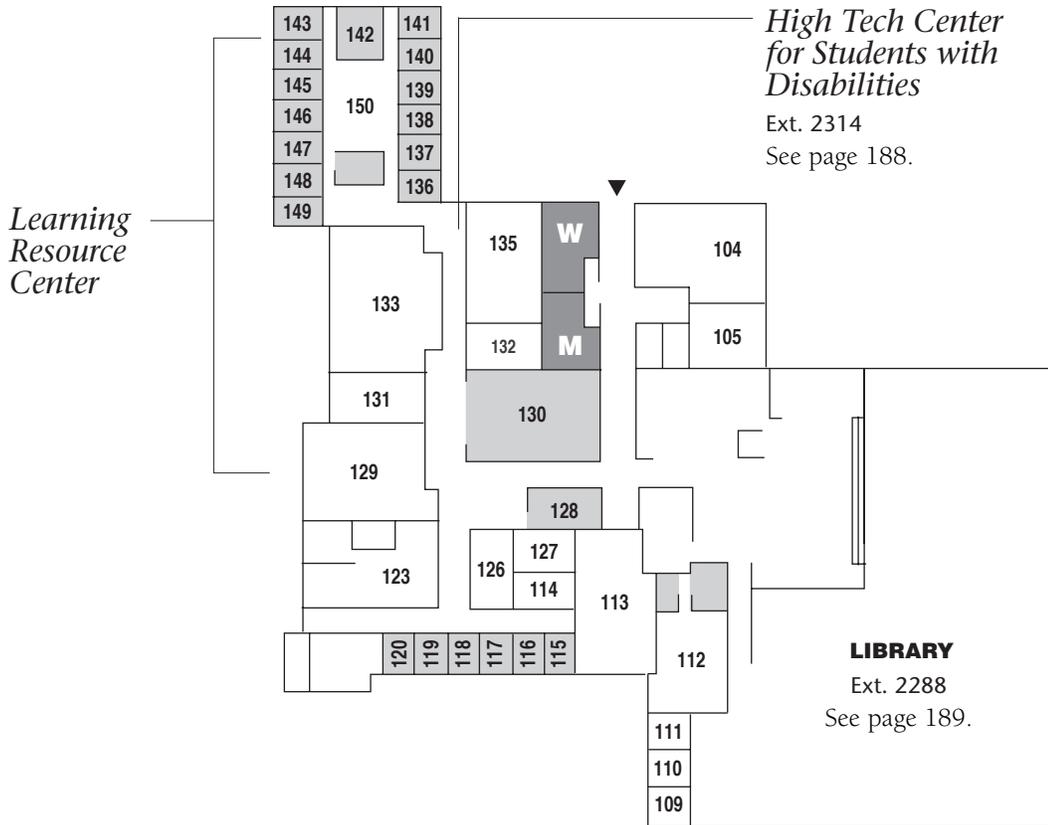
## *Elizabeth McClung Brod Family Resource Center*



### Gregory Forum

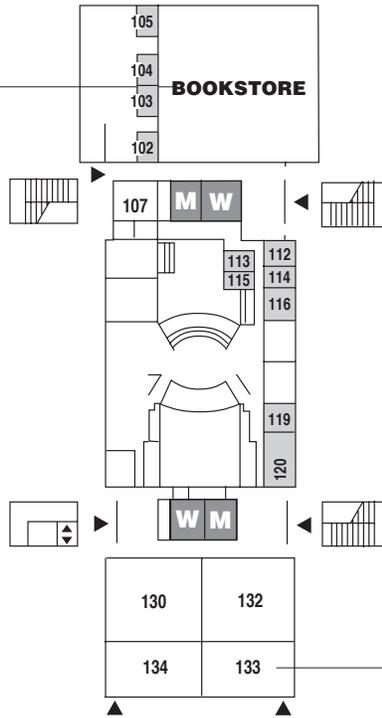


### Eva Emery Dye Learning Resource Center



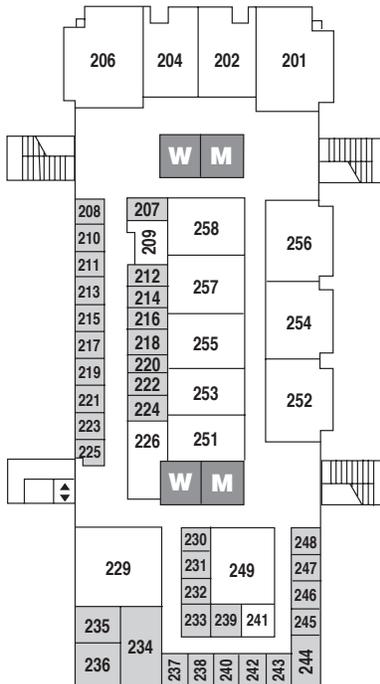
### McLoughlin Hall (1st floor)

*Bookstore*  
Ext. 2248, 2421  
See page 185.

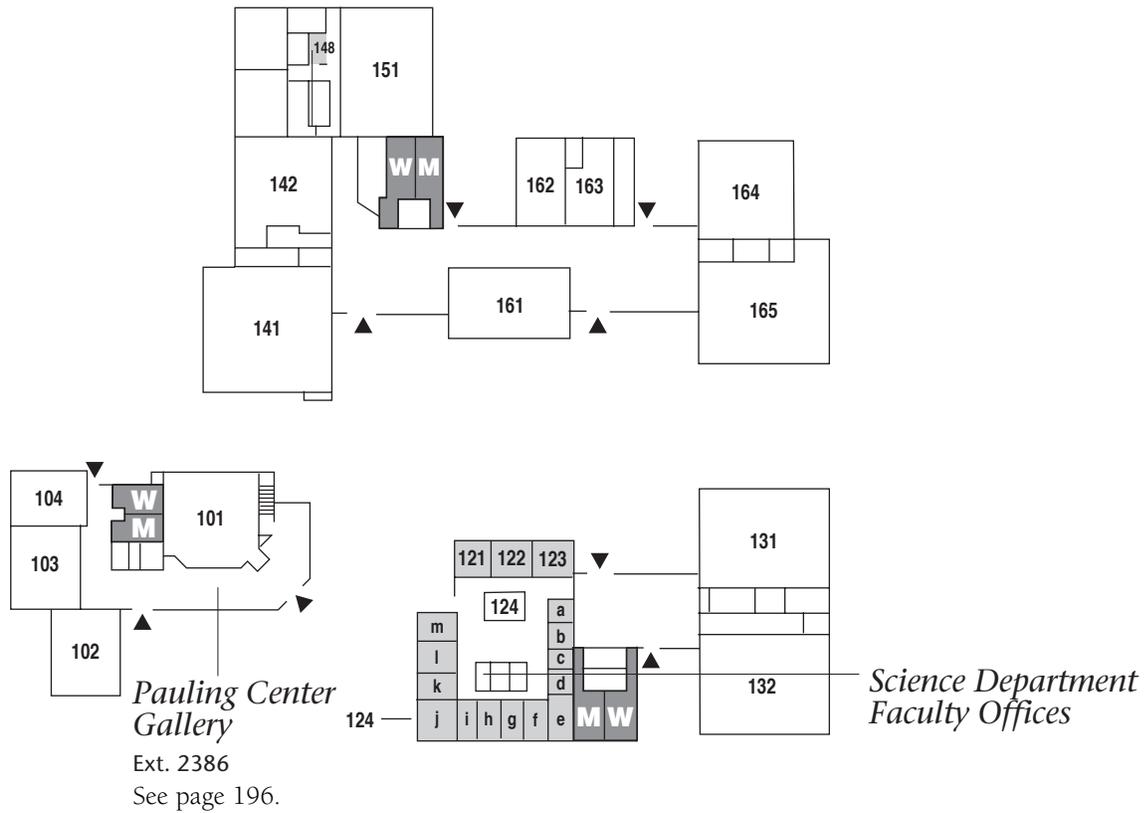


*Business/Computer Lab*  
Ext. 2510  
See page 187.

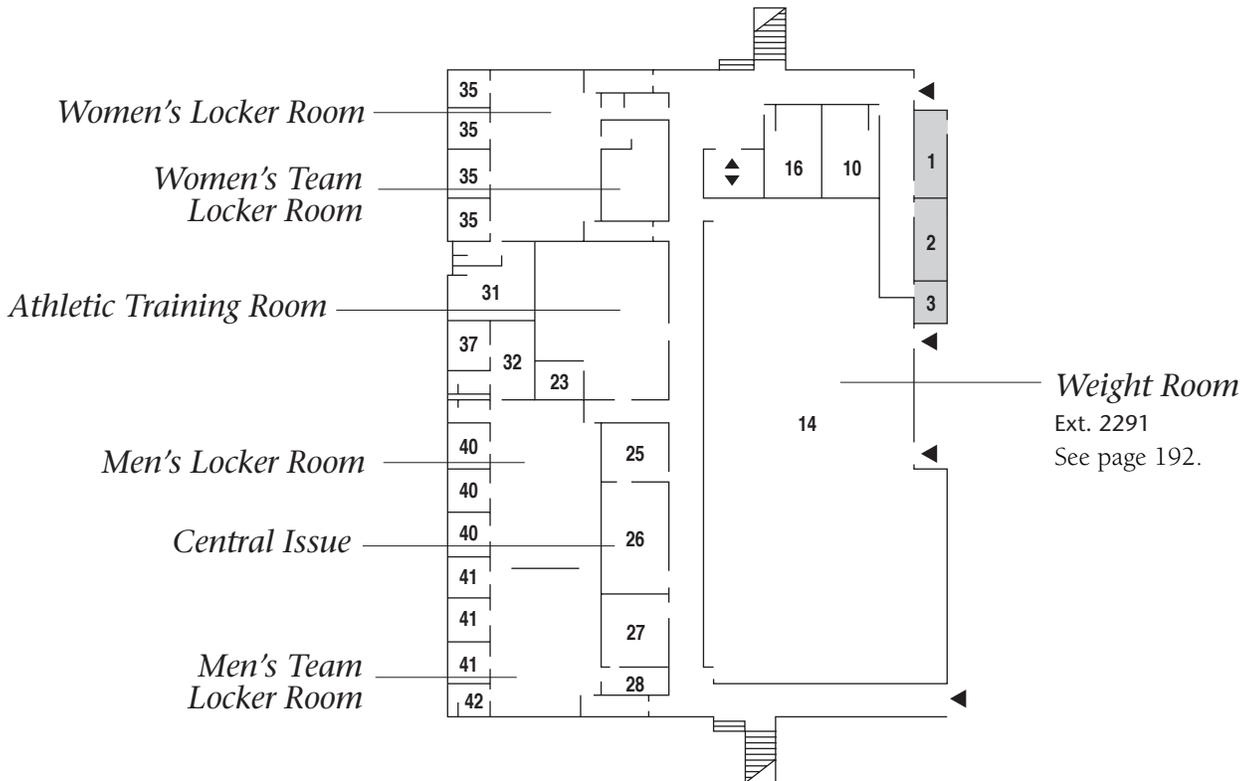
### McLoughlin Hall (2nd floor)



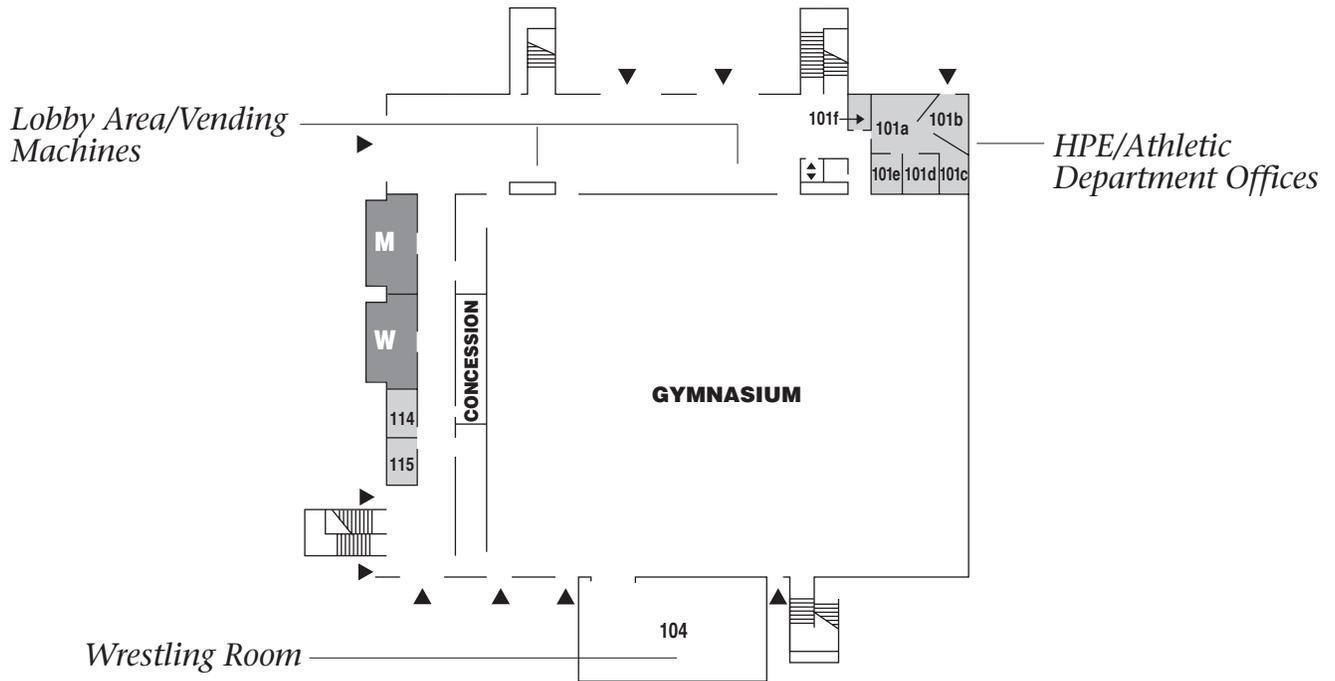
### Pauling Center



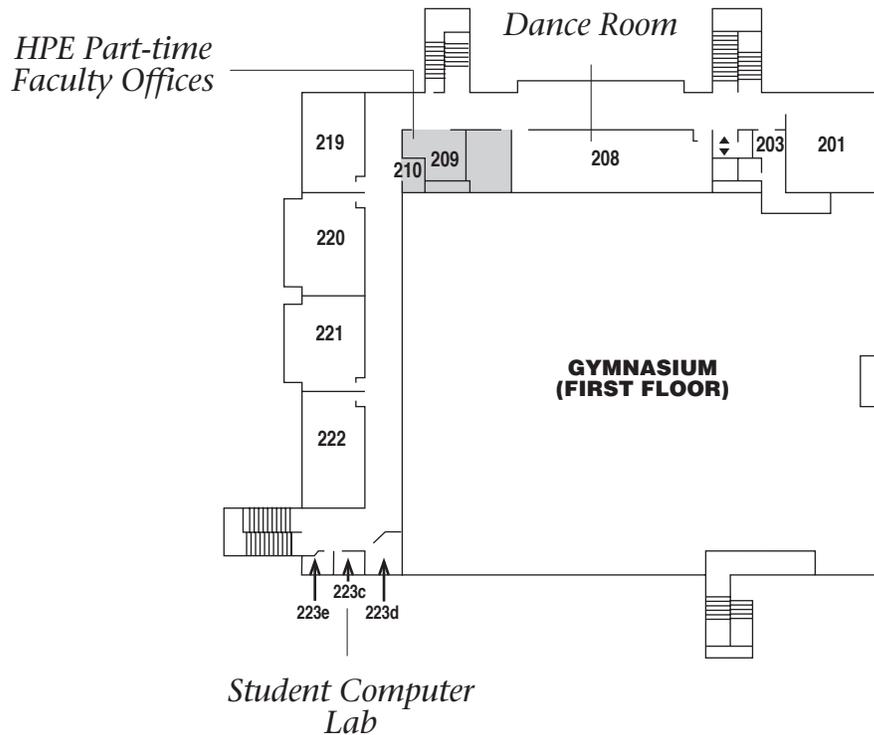
### Randall Hall (ground floor)



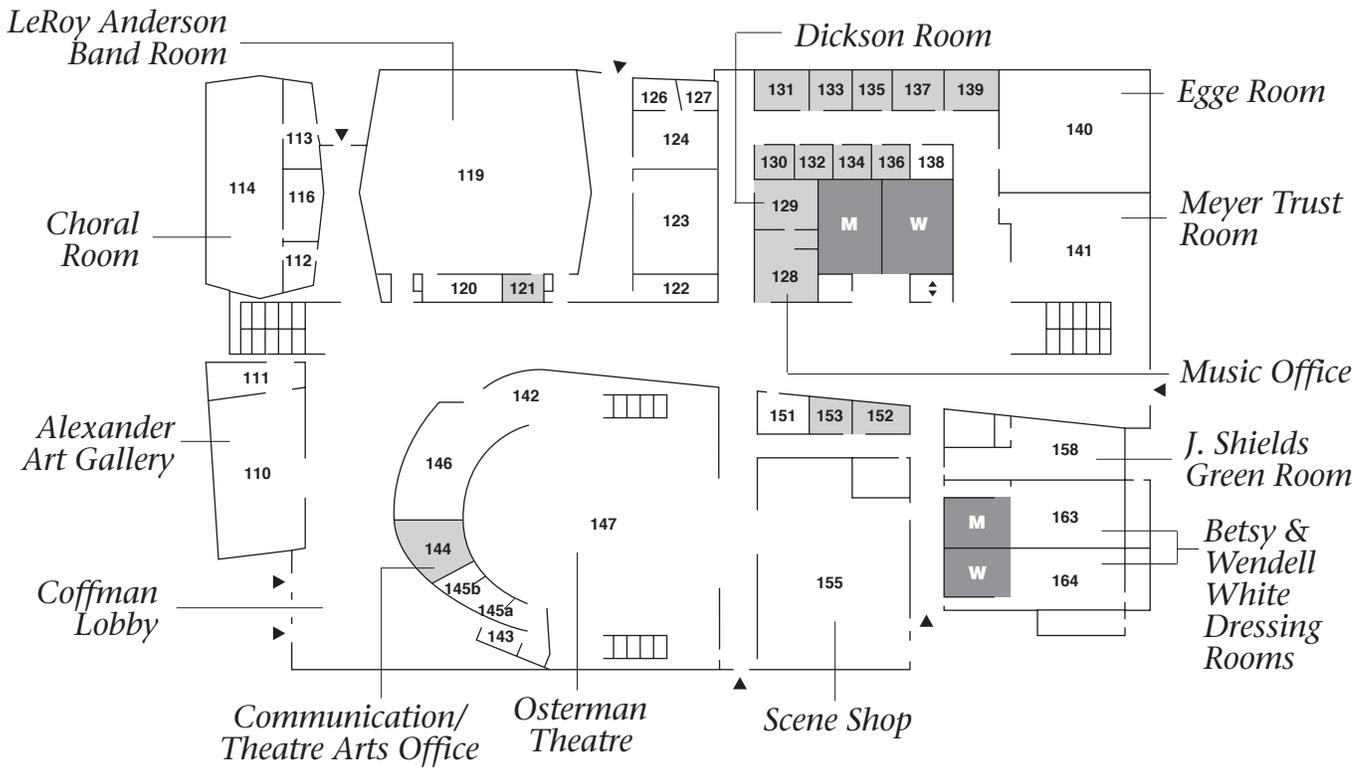
*Randall Hall (1st floor)*



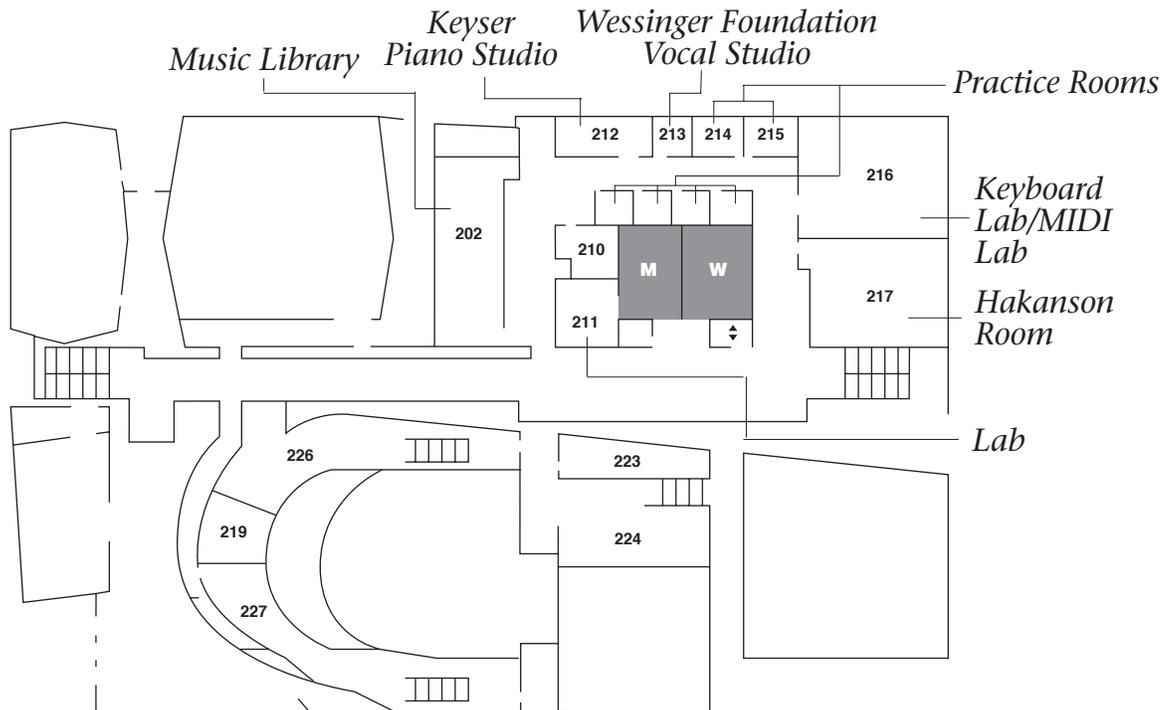
*Randall Hall (2nd floor)*



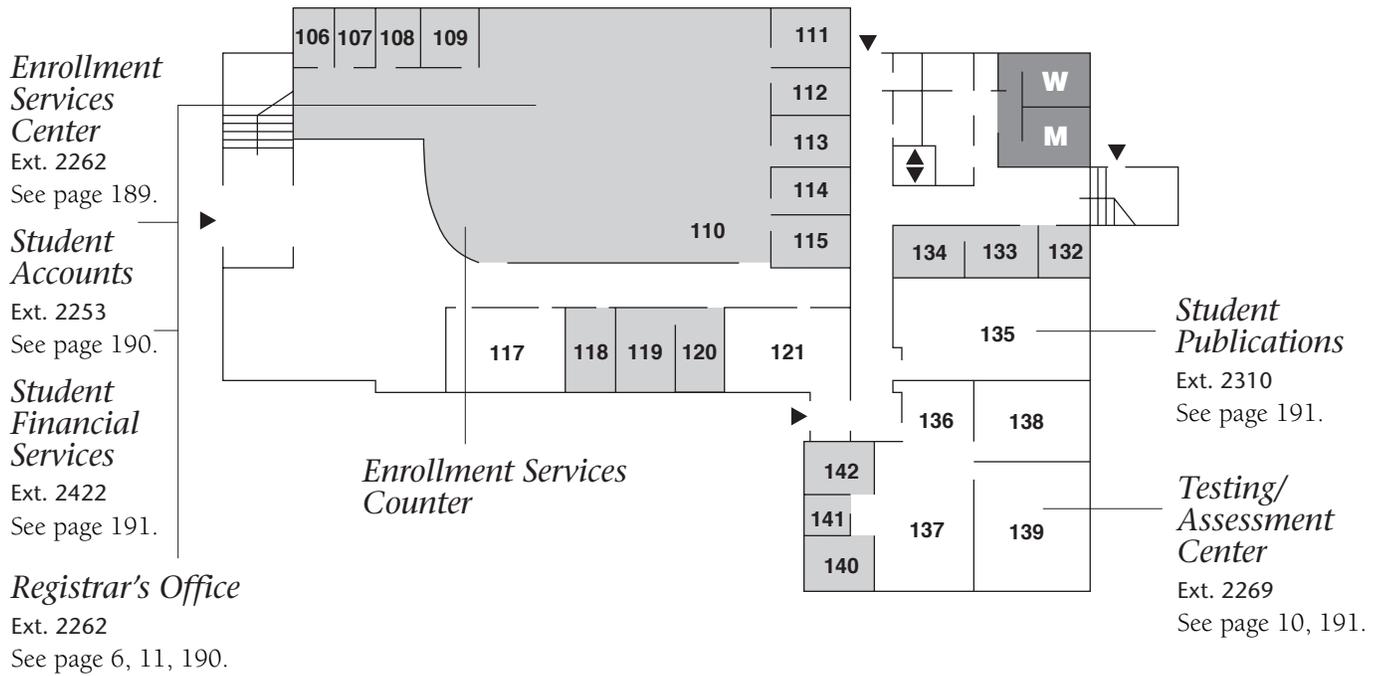
### Niemeyer Center (1st floor)



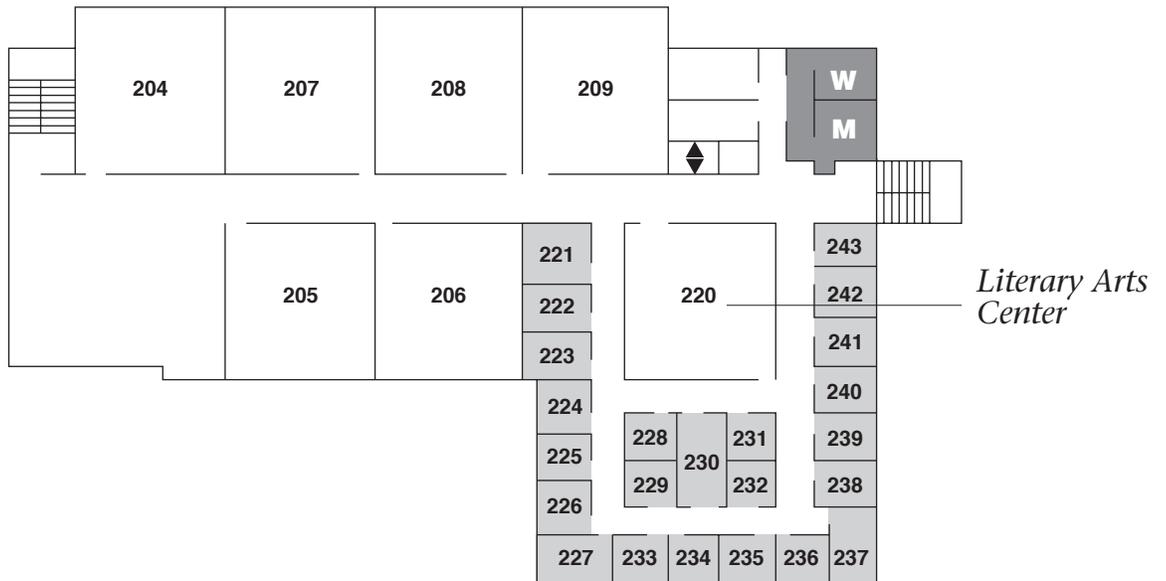
### Niemeyer Center (2nd floor)



### Roger Rook Hall (1st floor)



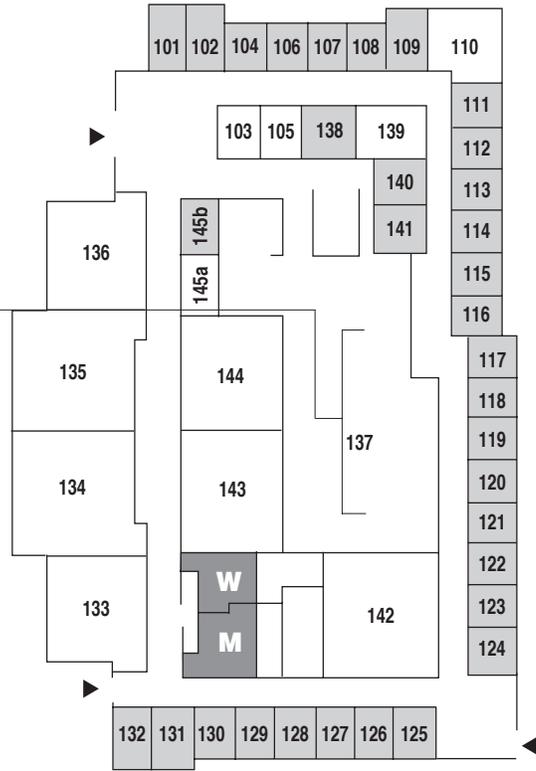
### Roger Rook Hall (2nd floor)



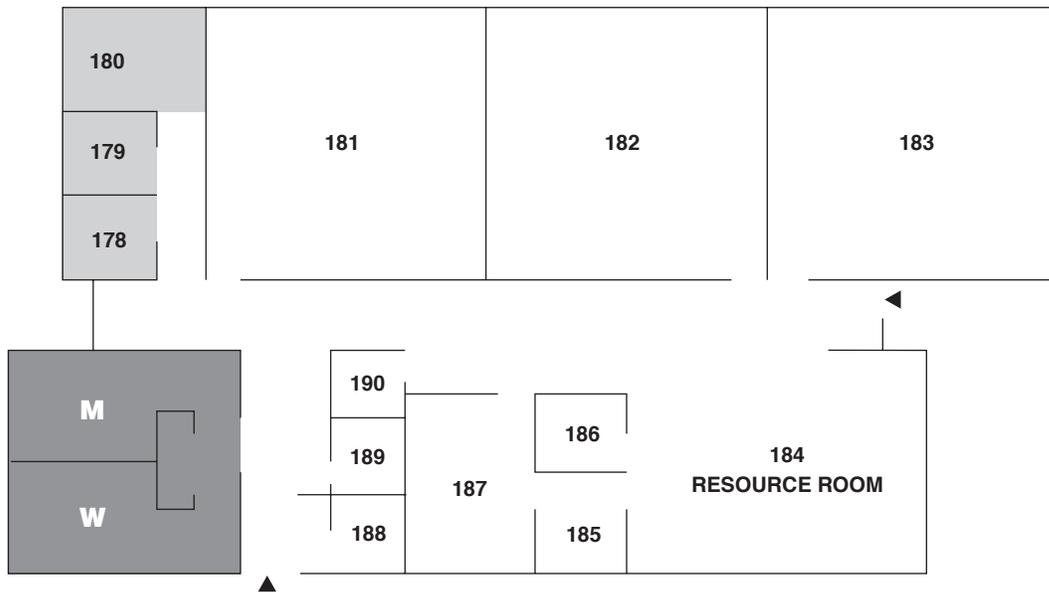
### Streeter Hall

#### Math/Computer Lab

Ext. 2308  
See page 187.

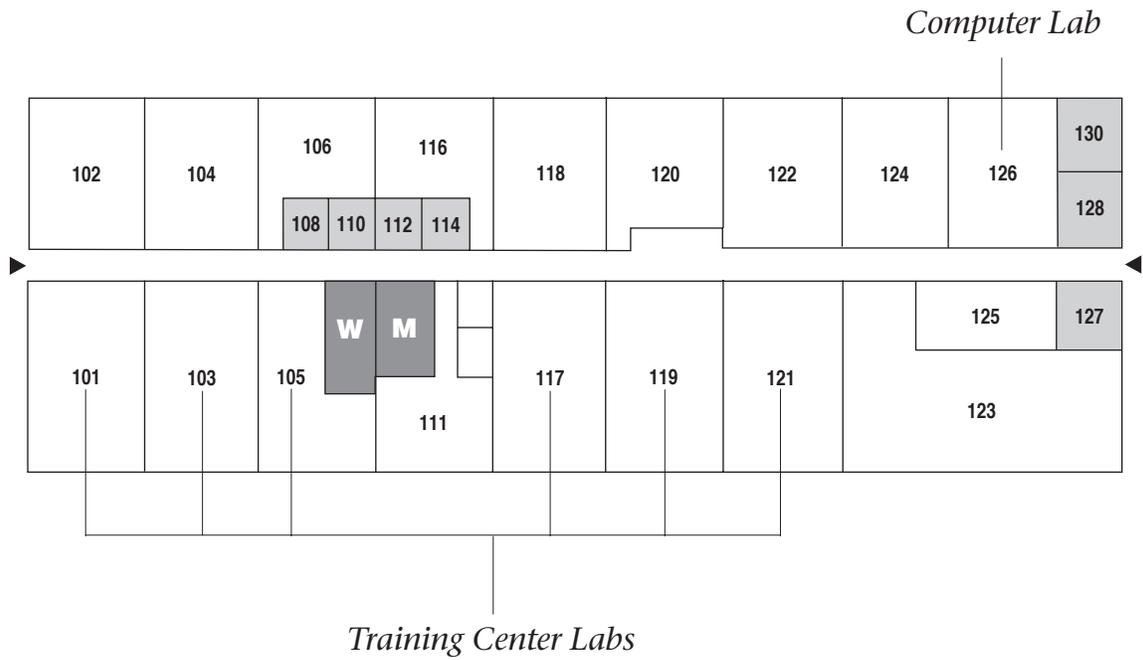


### Streeter Hall Annex

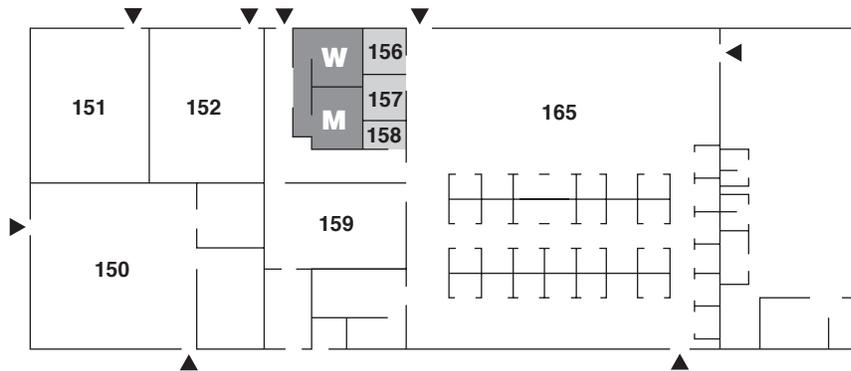


	restroom		staff office		classroom		building entrance		elevator
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### Training Center A



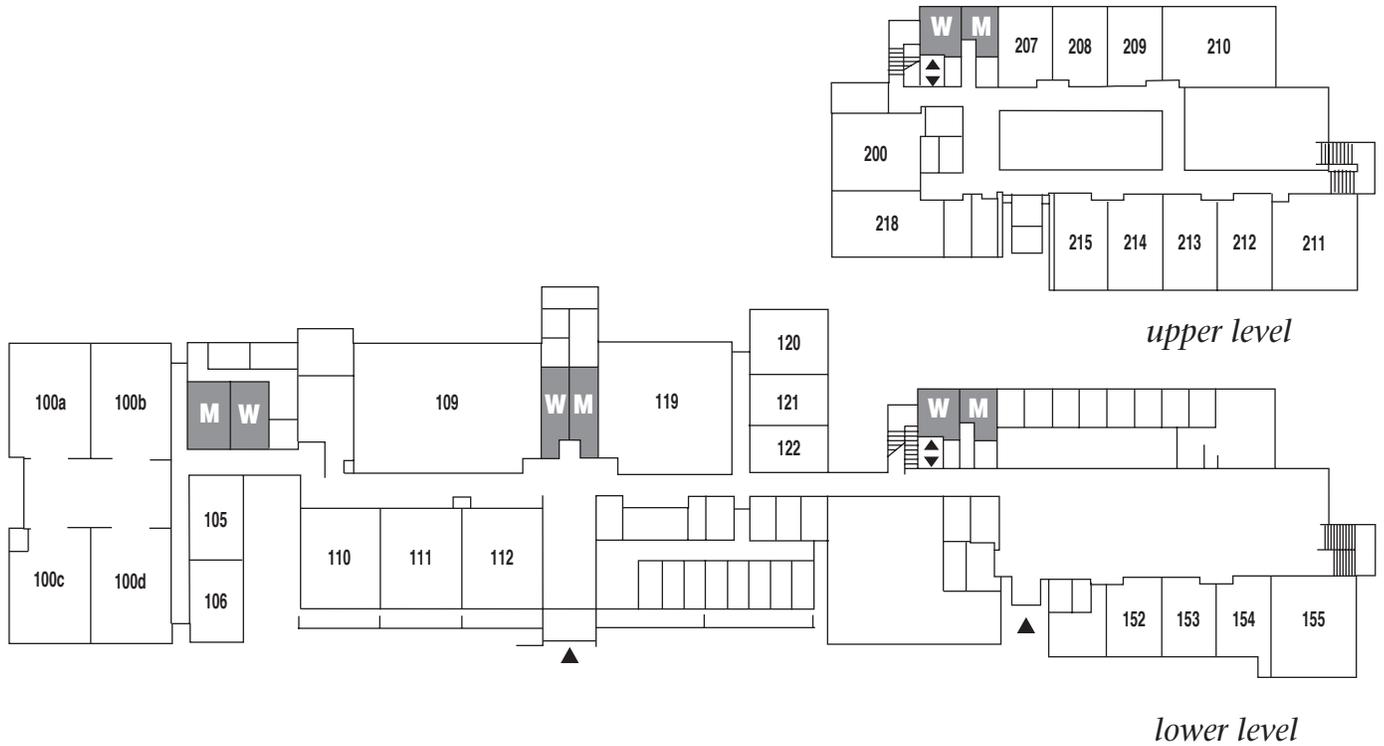
### Training Center B





## CCC Wilsonville Campus

29353 Town Center Loop E  
Wilsonville, OR 97070



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# Student Services & Activities

## Academic Advisors

**BILL BROD COMMUNITY CENTER**  
Ext. 2213

Academic Advisors are available on a drop-in 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 planning, and transfer information.

## Advising & Counseling Center

**COMMUNITY CENTER**  
Ext. 2213

The Advising & Counseling Center provides many services to assist students. Residing in the Advising & Counseling Center are:

- Academic Advisors
- Latino Services
- Tutorial Services
- Disability Resource Center
- International Students Program
- College Counselors

## Associated Student Government

**COMMUNITY CENTER**  
Ext. 2636

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.

## Athletics

**RANDALL HALL**  
Ext. 2291

### 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, basketball, and baseball. Women's intercollegiate sports include basketball, softball, volleyball, track, cross country, and soccer.

### Intramural

In addition to a comprehensive physical education program, Clackamas offers opportunities for students to participate in a variety of intramural sports activities, including tennis, racquetball, fun runs, softball, volleyball, basketball, flag football, and badminton (Not all activities are offered each year.)

## Bookstore

**MCCLOUGHLIN HALL**  
Ext. 2248

The Bookstore is the place to shop for almost everything a student needs for college. Items in stock include new and used textbooks, study aides, calculators, computer accessories, art, drafting and office supplies, sundries, stamps, school supplies, greeting cards, general books, CCC clothing, snacks, candy, cold drinks, ice cream and Tri-Met bus passes. The Bookstore offers a special order service for many items not normally stocked.

The Bookstore offers textbooks online at [www.cccbooks.com](http://www.cccbooks.com)

Limited bookstore services are offered at CCC Harmony Campus during the first two weeks of fall, winter and spring terms. The main campus bookstore is open extended hours during the first two weeks of Fall, Winter and Spring terms.

While textbook buyback is open year round, students are encouraged to sell their books at term ending when prices are usually better.

The Bookstore accepts current VISA, MasterCard or Discover cards, local bank imprinted checks for exact amount of purchase. We are happy to accept Clackamas E-Loan checks for purchases within \$50.00 of the check amount. A government issued picture ID and CCC student ID are required to write a check at the Bookstore. Two-party or out-of-area checks are not accepted. Purchases made by check require a 14 day waiting period before cash is reimbursed. A store credit is issued in the interim.

## *Campus Tours*

**COMMUNITY CENTER**  
Ext. 2481

CCC tours are provided for prospective students and community members to view campus life. Student Ambassador tour guides are available by appointment. Call to schedule an individual or group tour, or sign up online at <http://www.clackamas.edu/contact/tour.asp>

## *Career Information*

**COMMUNITY CENTER**  
*Career and Employer Resource Center*  
Ext. 2409/2232

*Advising and Counseling Center*  
Ext. 2213

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
- Résumé, Cover Letter, Application and Interviewing Assistance
- Individualized Training Arranged with Local Employers
- Employment Listings
- Career Workshops and Classes
- Job Search Workshops and Classes
- Career Counseling

Many of these resources are available online. Career Exploration courses are available both on campus and online through the Counseling Department and the Life and Career Options program. Cooperative Work Experience also offers an opportunity for students to earn credits while having workplace experiences that enhance their knowledge and employability.

## *Child Care*

**FAMILY RESOURCE CENTER**  
503-657-9795

The Child Care Center is available for students, employees and community families. The center, managed by the YMCA of Columbia-Willamette, is open year-round, Monday through Friday. Care is available for children ages six weeks through six years for a monthly fee. During the summer, care is also available for six- to 12-year-olds. The center is supervised by specialists trained in the social and developmental needs of young children and accredited by the National Association for the Education of Young Children.

Short term care is available for students in two or three hour time blocks, two to three times a week, for children 30 months and older. Fee is per term.

Preregistration is required. Scholarships are available on a limited basis. For referral to local family day care homes, call 503-253-5000.

## *Clubs*

**COMMUNITY CENTER**  
Ext. 2245

Some of the clubs active on campus include Associated Landscape Contractors of America, Baptist Student Ministries, Black Student Union, Cat Club, Chrysalis, Computer, Deutschen Veren (German), Fellowship of Christian Athletes, Rainbow, Horticulture, International, Latter Day Saints Student Association (LDSSA), Pacific Northwest Clean Water Association Students, Phi Theta Kappa, Spanish, Speech, Unidos, and Writers. New interest groups are free to organize under the student constitution and the regulations of the college.

## *College Counselors*

**COMMUNITY CENTER**  
Ext. 2213

College counselors are available on a walk in basis or by appointment and can help with a wide array of personal and academic and/or professional concerns. These include academic, personal and/or relationship issues, drug or alcohol issues, job and career counseling, as well as dealing with any issues or concerns with college staff or policies.

## Computer Labs

### OREGON CITY CAMPUS

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

#### STREETER HALL

Ext. 2308

Computers in the Streeter Lab are available to any Clackamas student upon presentation of a current CCC student ID card. Students who are not computer literate need to enroll in a computer literacy class before using the lab. Students can take advantage of Windows-based computers, word processing and spreadsheet programs, and lab tutors. Computers in the Streeter lab have e-mail capability and Internet access. Other network access such as Telnet, FTP, and World Wide Web is also available.

### *Business Computer Lab*

#### McLOUGHLIN HALL, M133

Ext. 2510

The Business Department computer lab is for the use of all business and online students. Group work may be arranged by appointment. Instructor assistants are available to help students with all business technology programs.

The lab is open Monday through Thursday, day and evening; Friday, day only. Lab hours are posted in McLoughlin Hall outside rooms M130 and M132 and on the web at [www.clackamas.edu/business/](http://www.clackamas.edu/business/). The lab is closed weekends, summer, and when the college is closed. Students travelling a distance may call ahead to confirm lab availability.

### *Drafting Technology Lab*

#### BARLOW HALL, B274, B276 & B277

Ext. 2379

Open lab schedules are posted outside each lab.

The Drafting Technology labs are available for current CAD, CDT or GIS students only. Lab assistants are available.

## Music Technology and Audio Recording Labs

### NIEMEYER CENTER, N216

Ext. 2434

The Music MIDI and Audio Recording Labs enable students to compose, record, print, and produce music. These Labs are available to CCC students enrolled in Music classes which use related Music Technology hardware and software. The CCC MIDI lab houses 20 state-of-the-art MIDI work stations. The Audio Recording Lab features both analog and digital recording formats.

Software includes Finale, Digital Performer, Pro Tools, Reason, Vision, Music Shop, Practica Musica, and Band in a Box.

## Cooperative Work Experience

### COMMUNITY CENTER, CC129

Ext. 2232/2273

The Cooperative Work Experience (Co-op) program offers students the opportunity to earn college credit by working in a job directly related to their program of study. Co-op offers expanded learning experiences through exposure to actual work situations, organizational relationships, equipment, and techniques that cannot be duplicated in the classroom.

CCC's Co-op program creates a vital bridge between college studies and workplace success.

### Student Benefits

- Improved job skills
- Increased professional confidence
- Valuable employer contacts
- College credit for on-the-job experience
- Work experience suitable for a résumé
- Possible source of income to cover college expenses

### Requirements & Registration for Co-op:

- Complete the Co-op application form, and determine number of work hours and appropriate credits;
- Contact program instructor or the Co-op Office prior to the beginning of the term;
- Register for 1) the appropriate Co-op course for program of study and 2) the classroom or online Co-op seminar;
- Set and accomplish (with the help of a Co-op instructor and worksite supervisor) 3–5 measurable learning objectives designed to improve job performance).
- Participate in a Co-op seminar course on workplace success skills and complete seminar assignments;
- Successfully complete 60–216 hours of work experience for 2–6 variable credits;

*Continued*

## Credit & Grading

Cooperative Work Experience is a variable credit course; the number of credits earned depends on the number of hours worked and the program requirements. Students may earn a maximum of six Co-op credits per term and a maximum of 12 Co-op credits per year.

<b>Work/Credit Chart</b>			
<i># of Credits</i>	<i>Hours Worked Per Week</i>	<i>Total Hours Per Term</i>	<i>Seminar Hours Per Week</i>
6 credits	18-20 hours	180-216 hours	1.5 hours
5 credits	15-17 hours	150-179 hours	1.5 hours
4 credits	12-14 hours	120-149 hours	1.5 hours
3 credits	9-11 hours	90-119 hours	1.5 hours
2 credits	6-8 hours	60-89 hours	1.5 hours

### For More Information

Drop by the Cooperative Work Experience Office in the Community Center, CC129, or call 503-657-6958, ext. 2273/2232.

## *Co-op Student Tutors*

### COMMUNITY CENTER

Ext. 2324

Students working as tutors are linked with the CCC Cooperative Work Experience program which provides them with credits earned for on-the-job experience.

Eligibility for tutoring is determined by the Coordinator of Tutorial Services, and may require the recommendation of the instructor or the Advising & Counseling Center.

## *Disability Resource Center*

### COMMUNITY CENTER, CC142

Ext. 2324

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 hearing impaired students, note taking options, proctored testing, taping of printed materials, test readers/writers, campus-based adaptive equipment and training, enrollment assistance, orientations, campus tours by special arrangement, referral assistance, program and career guidance, and counseling. DRC also provides faculty/staff consultations. Students requesting services must:

- Arrange to meet with the DRC counselor.
- Provide DRC with documentation from a certifying professional that establishes the existence of a current disability and supports the need for accommodations requested. Documentation is required to be on file with DRC prior to receiving services.
- Personally request accommodations through the DRC counselor.

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

## *High-Tech Center for Students with Disabilities*

### COMMUNITY CENTER, CC140

Ext. 2324

The TACT (Training in Adaptive Computer Technology) Center offers special testing and adaptive computer assistance for disabled students. Emphasis is placed on the use of prescriptive, adaptive computer hardware and software for academic coursework and/or vocational training.

## *Enrollment Services Center*

**ROGER ROOK HALL**  
Ext. 2262

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

## *Evening Office*

**COMMUNITY CENTER**  
**BUILDING RECEPTION/SWITCHBOARD AREA**  
Ext. 0

Services include general information, contact with Campus Safety for vehicle assistance and walkouts, lost and found access, pick up and drop off area for messages and materials for departments closed evening hours, copy machine and vending machine assistance, and general problem-solving and assistance for students, staff and the public.

## *Family Resource Center*

Ext. 2526

The Family Resource Center brings together the educational, career and social support services needed for success, including basic skills education, college-credit classes, career and educational planning and child care. Through the combined resources of Clackamas Community College and other public and private agencies, the Family Resource Center can help you transition to productive employment and self-sufficiency.

## *Food Service*

**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.

## *Instructional Media Services*

**BARLOW 104**  
Ext. 2270

Media equipment is provided in all classrooms on campus to assist in the delivery of instructional material. An extensive library of educational video tapes is available for instructional support via the closed-circuit TV system, in the classrooms by instructor request, and at video viewing carrels for student access. The college is equipped to participate in teleconferencing.

Telecourses are an integral part of the college educational delivery system. Videotaped courses are broadcast on local cable television systems and campus video viewing carrels.

## *Video Viewing Carrels*

**DYE LEARNING CENTER**

These viewing stations may be used to watch telecourses, class video assignments, and other educational video presentations. Stations are not available for recreational use.

## *International Students*

**ROGER ROOK HALL, REGISTRAR'S OFFICE**  
Ext. 2263

Clackamas Community College is eligible to admit and welcomes students from around the world. Please go to [www.clackamas.edu](http://www.clackamas.edu) for Program for Intensive English (PIE) or International Student application materials.

## *Latino Student Services*

**COMMUNITY CENTER, COUNSELING & ADVISING**  
Ext. 2717

The Latino Student Services office assists Latino students with registration, academic advising, and personal counseling.

## *Library*

**DYE LEARNING CENTER**  
Ext. 2288

The library has a collection of over 52,000 items, and also offers electronic access to the complete text of more than 3,600 journals, to newspapers, to over 3,000 e-books, to hundreds of websites and to collections at other public, college and university libraries. Librarians assist students in the use of library and Internet resources and provide formal library instruction on demand. Electronic reference assistance, interlibrary loan, reserve material, periodicals and newspapers are also available. Quiet study space and small-group study rooms are provided. Many databases may be accessed from home through the library's webpage [library.clackamas.edu](http://library.clackamas.edu). The Library is available for use by students, faculty, staff, and the general public. College users are issued college ID/Library cards at Roger Rook Hall. Public users may obtain a library card free of charge at the CCC library circulation desk.

## *Loans*

See Student Financial Services pages 7-9, 191, 214.

## *Music*

### **NIEMEYER CENTER**

Ext. 2434

The Music Department sponsors a number of vocal and instrumental performing groups which are open to the community. Scholarship funds may be available for students who participate in music groups (need not be a music major). Groups include Concert Band, Jazz Ensemble, Chamber Singers, Vocal Jazz Ensemble, Clackamas Chorale (evening), Jazz Combo/Improvisation, and Pep Band (pop/blues/rock/R&B). Some ensembles require an audition.

Music MIDI and Audio Recording Studio Labs are available for students to compose, record, print, and produce music. Students may also study live sound engineering. The CCC MIDI lab houses 20 state-of-the-art MIDI work stations. The Audio Recording Lab features both analog and digital recording formats. Software includes Finale, Reason, Digital Performer, Pro Tools, Vision, Music Shop, Practica Musica, and Band in a Box. 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.

## *Registrar's Office*

Ext. 2060

The Registrar's Office is responsible for student records and admission. Additional services include registration, special admission procedures, academic regulations, grading, degree/graduation evaluations, transcripts, and instructional standards/policies.

## *Service Learning Volunteers*

### **COMMUNITY CENTER**

Ext. 2625

The Service Learning program provides volunteer/community service opportunities for CCC students. Service Learning is a two-term program which combines classroom learning with volunteer field experience. College credit is earned for participation in the program and tuition is free.

## *Special Events*

Find events information at [www.clackamas.edu/calendar](http://www.clackamas.edu/calendar)

## *Speech & Debate: Forensics*

### **NIEMEYER CENTER**

Ext. 2726

The forensics program—speech and debate—is open to all students and offers opportunities to get involved in local and regional speech activities. The forensics team is traditionally a strong contender among Northwest colleges in both junior and novice competition, and Clackamas offers coaching in all speech events. Talent/Participation Awards and work-study positions are available for qualifying forensics team members.

## *Student Ambassadors*

### **COMMUNITY CENTER**

Ext. 2481

Student Ambassadors are chosen each year through an application/interview process. Ambassadors conduct campus tours, represent CCC at college and career fairs, participate in high school visits, host special events, help with New Student Experience, and staff college information booths. In addition, Ambassadors respond to requests for information that come to the college through the Web, by phone, or mail.

## *Student Accounts*

### **ROGER ROOK HALL**

Ext. 2253

The Student Accounts Office handles student payments, payment arrangements, accounts receivable billings and collection. Students may cash a personal check for up to \$10.

## *Short-Term Emergency Loans*

If you are a returning student with emergency educational and financial needs, you may be eligible for a short-term emergency loan of up to \$300. See Student Accounts for an application. There is a nonrefundable \$5 fee if the loan is granted.

## *Student Activities Office*

### **COMMUNITY CENTER**

Ext. 2245

The Student Activities 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, and other programs of interest to students. The office is also the location of the campus Lost & Found.

## Student Financial Services

**ROGER ROOK HALL**

### *Financial Aid*

Ext. 2745

The Student Financial Services Office provides information on current aid programs, applications and forms (including the Free Application for Federal Student Aid), scholarships and waivers. Copies of expense budgets for determining eligibility, sample loan repayment schedules, and requirements for satisfactory academic progress are available. Also see pages 7-9.

### *Perkins Loans*

Ext. 2410

Clackamas Community College offers Perkins Loan funding to students who meet all eligibility criteria. For information on Entrance and Exit Counseling and collection for Perkins loan accounts contact ext. 2410.

### *Scholarships*

Ext. 2373

The Scholarship Coordinator helps students with information regarding scholarships and provides assistance throughout the application process. Contact the Student Financial Services Office for additional information. Also see page 9.

### *Veterans*

Ext. 2554

The Veterans Coordinator provides assistance to veterans, spouses, and children eligible for veterans educational benefits. See page 9 for details about educational benefits.

### *Work Study*

Ext. 2745

The Work Study program is a federal financial aid program providing part-time employment not to exceed 19 hours per week. The program is based on financial need and available to eligible students who apply early and are enrolled in at least six credits of coursework in a degree or certificate program. Applicants should use the Free Application for Federal Student Aid (FAFSA) to apply for financial aid.

## Student Publications

**ROGER ROOK HALL, RR135**

Ext. 2310

Student publications include *The Clackamas Print*, the award-winning student newspaper published weekly during the school year, and *Synesthesia*, a literary magazine publishing student creative writing, photography, and art. Student contributions are welcome and provide good opportunities for practical experience in writing, photography, illustration, layout, desktop publishing, and graphic design. Tuition waivers are available for student editors and the advertising manager of *The Clackamas Print*. For more information and applications, see the Journalism instructor.

## Testing/Assessment

**ROGER ROOK HALL, 136**

Ext. 2269

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

- Computer Literacy Exam
- Computer Science Placement
- Distance Learning proctored testing
- GED (General Educational Development)
- Make-up exams (by instructor arrangement)
- Oregon Department of Agriculture Exams
- Placement assessment
- State of Oregon Tax Board Exams

## Theatre

**NIEMEYER CENTER**

Ext. 2725

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.

## Tutorial Services

**COMMUNITY CENTER, CC142**

Ext. 2324

Tutorial Services provides free individual and small group tutoring to eligible students in most subject areas. Tutors are available by appointment during regular college hours on the Oregon City, Harmony and Wilsonville campuses. Online tutors are also available for Distance Learning classes.

*Continued*

### *Computer Science & Math*

#### **STREETER HALL ACADEMIC COMPUTING LAB**

Ext. 2736

Computer Science tutors are available in the Streeter Hall lab for all computer science classes offered at CCC.

For every level of math skill, one or more of the following is available in the lab: math tutors, computers with course-related software, and video tapes.

### *Literacy*

#### **DYE LEARNING CENTER**

Ext. 2823

Volunteer tutors are available to teach adults basic skills.

### *Weight Room*

#### **RANDALL HALL**

Ext. 2291

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

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## *Distance Learning*

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There are many alternatives to on-campus courses that allow busy students to pursue their educational goals. These courses may involve the use of computers, video, television, print materials by correspondence, voice-mail, e-mail and the Internet. Some of these courses require orientation, class meetings, lab work and testing on campus. Distance education courses are listed in the *Distance Learning* section of the quarterly *Schedule of Classes* and special icons indicate these nontraditional classes in the credit course listing.

### *Distance Learning*

#### *Correspondence*

Ext. 2379

The Drafting Department offers a variety of AutoCAD and drafting technology courses in a correspondence format. The courses require that students have a computer and a current version of AutoCAD software.

### *Online*

Ext. 2462

Online classes are delivered via computer. They may include lectures, labs, projects, and testing. Students interact with the instructor and other students via computer. To participate in an online course, students need access to a computer, an Internet service provider and a web browser. Computers are available on campus in the Streeter Lab and Dye Learning Center, as well as many public libraries. For more information see: [dl.clackamas.edu](http://dl.clackamas.edu) or for statewide courses: <http://www.oregoncollegesonline.org> or <http://OregonONE.org>

### *Telecourses*

Ext. 2270

Individual telecourses may be broadcast on campus, rented for use at home, or viewed via cable television. In addition to televised lessons, telecourse instruction may include textbooks, classroom discussion, and assignments and exams. For more information see: [dl.clackamas.cc.or.us](http://dl.clackamas.cc.or.us) or <http://www.oregoncollegesonline.org> Call for broadcast information.

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## *Special Programs*

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### *Apprenticeships*

Ext. 2319

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 log onto [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). You will find information about available apprenticeship training. Each apprenticeship group has their own methods and standards for selecting new apprentices.

Clackamas Community College offers courses for registered apprentices and people 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.

For more information contact Tom Laugle, ext. 2319, or [toml@clackamas.edu](mailto:toml@clackamas.edu).

## Basic Skills Development

**DYE LEARNING CENTER**  
Ext. 2595

The Dye Learning Center 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, learn English as a Second Language, and improve basic academic skills.

### Adult High School Diploma

**DYE LEARNING CENTER**  
Ext. 2595

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 receive high school and college credit for the same class.

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 the current *Schedule of Classes* for information.

#### REQUIREMENTS FOR ADULT HIGH SCHOOL DIPLOMA

Complete a minimum of 22 high school units:

##### Subject Units

Language Arts	3
<i>(Shall include the equivalent of 1 unit in written composition.)</i>	
Mathematics	2
Science	2
US History	1
Global Studies	1
Government & Civics	1
Health Education	1
Physical Education	1
Career Education	1
Personal Finance	1
Applied/Fine Arts, or Foreign Language	1
<i>(One unit shall be earned in any one.)</i>	
Technology	1
Electives	6
<b>Total:</b>	<b>22</b>

All AHSD candidates must have a ninth grade reading level or better and demonstrate minimum competency in reading, writing, speaking, listening, computing, and reasoning.

In addition to the credit and competency requirements, students must maintain a 2.0 G.P.A. at the college and successfully complete at least 12 college credits or two high school units through CCC.

### Basic Skills for College Success

**DYE LEARNING CENTER**  
Ext. 2595

The Campus Learning Center offers instruction in all basic skills including credit classes in reading, spelling, vocabulary and study skills, GED preparation, and high school credit classes. Additional study skills assistance is available through individualized discussion/counseling, and self-instructional materials and media. Both day and evening classes are held for students age 16 through adult.

### Gateway to College

**MOD 1 & 2**  
Ext. 5227

The Gateway to College program at Clackamas Community College serves at-risk youth, 16 to 20 years old. Gateway students have the opportunity to earn a high school diploma while achieving college success. Students simultaneously accumulate high school and college credits, earning their high school diploma while progressing toward an associate degree or certificate. Gateway staff support students through a first term cohort experience; in subsequent terms, students continue their connection to staff for academic advising, support and problem solving.

For more information contact the Gateway to College program coordinator, 503-657-6958, ext. 5227.

### General Educational Development

**DYE LEARNING CENTER**  
Ext. 2595

Students may earn high school equivalency certificates by passing General Educational Development (GED) tests. 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 Campus Learning Center. Department placement tests are required.

GED preparation is also available by telecourse. Thirty minute sections of GED preparation are broadcast on PBS and three local cable channels. Individual guidance is available as needed and a workbook is provided for home use.

*Continued*

*Tri-City Alternative Program*

**CCC CAMPUS, CLAIRMONT HALL**  
Ext. 2414

The Tri-City Alternative Program (TCAP) is a college program serving 15- to 17-year-olds who plan to earn high school credits toward a diploma or prepare for a GED. TCAP provides a combination of large group/small group and one-on-one assistance for students in order to further develop academic and personal skills needed for the workplace and continuing education.

*Young Parent Opportunity Program*

**FAMILY RESOURCE CENTER**  
Ext. 2592

The Young Parent Opportunity Program (YPOP) is a comprehensive educational program which provides an opportunity for pregnant or parenting teens to continue their education, increase parenting skills, and prepare for employment.

*College Credit Alternatives*

Ext. 2213

There are several alternative ways you can earn college credit from Clackamas Community College. Please contact the Advising & Counseling Center for additional information about the following options:

*Advanced College Credit*

**CCC OREGON CITY CAMPUS, BARLOW HALL, B250**  
Ext. 2657

CCC has agreements with high schools in the college district to grant college credit for certain approved college-equivalent classes. You will register, pay for, and earn these credits while you are in high school.

CCC has agreements with the following high schools: Canby, Clackamas, Colton, Estacada, Gladstone, La Salle, Milwaukie, Molalla, Oregon City, Rex Putnam, Sabin-Schellenberg Center, Westside Christian, West Linn, and Wilsonville.

For more information contact your high school counselor or the CCC Advanced College Credit coordinator, 503-657-6958, ext. 2657.

*Advanced Placement (AP)*

Ext. 2264

If you took college-level courses in high school, you may be eligible for college credit and placement into college classes. You will need to take the AP Program Examination at your high school and have your test results sent to the CCC Registrar's Office. If you qualify for advanced placement, an evaluation specialist in the Registrar's Office will work with the appropriate college department for assigning credit.

*Credit for Prior Learning (CPL)*

Ext. 2213

Clackamas Community College's CPL program can award college credit for knowledge and skills acquired outside the classroom. For more information contact the CCC Advising & Counseling Center.

*Community Education*

**CCC HARMONY CAMPUS**  
Ext. 3230

Clackamas Community College offers a variety of adult and continuing education programs at more than 100 locations throughout the college district. These programs are designed to respond to community needs and interests and are scheduled at convenient times and locations. Classes, times, locations, and fees are listed in the *Schedule of Classes* mailed quarterly to district residences and businesses. Both credit and noncredit classes are available, including a senior study group and international travel opportunities.

Clackamas works closely with local school districts to sponsor community school offerings. Community schools offer local residents of all ages a variety of community-based programs.

For more information, contact the CCC Community Education Office or one of the following local Community Education/School offices:

Canby Community School	503-266-2086
Estacada Community School	503-630-6871
Gladstone Community School	503-650-2570
Molalla Community School	503-829-2359
N. Clackamas Community Ed./Milwaukie	503-653-3834
Oregon City Community School	503-785-8520
West Linn/Wilsonville Community School	503-673-7995

Clackamas also offers learning opportunities at local senior centers, care centers, and retirement homes. For more information contact 503-657-6958, ext. 3109.

## *English as a Second Language/ Program for Intensive English*

**DYE LEARNING CENTER**  
Ext. 2503

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

## *Education & Human Services*

**FAMILY RESOURCE CENTER**  
Ext. 2456

The Education & Human Services department offers the Life and Career Options Program, Bridges, and classes in education, nutrition, family studies, early childhood education, gerontology, human services, and parent education.

### *Bridges*

**FAMILY RESOURCE CENTER**  
Ext. 2456

The Bridges program provides assistance to students, ages 16-21 in making the transition from alternative high school programs to further education, training, or the workforce. Emphasis is placed on overcoming barriers, becoming self-directed, increasing self-awareness and self-esteem, and setting career and educational goals.

### *Life & Career Options Program*

**FAMILY RESOURCE CENTER**  
Ext. 2456

The Life and Career Options Program (LCOP) prepares people to enter or re-enter the job market. Day and evening classes offered each term help people overcome barriers to self-sufficiency. This program helps participants explore career options, develop job-search skills, establish career and educational goals, and access community resources. Free workshops are also offered.

## *Evening/Weekend Transfer Degree Offerings*

**HARMONY CAMPUS**  
Ext. 3108

Classes held at the CCC Harmony Campus provide students the opportunity to obtain a transfer degree by attending evenings and weekends. These classes are listed each term in the Schedule of Classes in the Harmony Campus section. Academic advising and student services are available.

## *Healthcare Professional Development*

Ext. 5247

The Healthcare Professional Development (HPD) courses are designed to provide professional upgrades for the healthcare professional. HPD classes can be scheduled by both open enrollment and by private contract. Healthcare courses are also offered for community/private citizen groups. They may be taught off campus for both healthcare and non-related healthcare industries. For more information contact the Professional Development/CE coordinator at 503-657-6958, ext. 5247 or darreno@clackamas.edu.

### **PROFESSIONAL UPGRADE COURSES**

The following courses are designed to upgrade professional skills and maintain or upgrade current certification/licensure.

HPD-009 CPR-Initial (0.6 ceu)

HPD-009 CPR-Renewal (0.4 ceu)

HPD-009 EMT-Oregon Intermediate Bridge (5.6 ceu)

HPD-009 Pain Management for Nurses (0.6 ceu)

HPD-130 Advanced Cardiac Emergencies (1 credit)

## *Honors*

### **ΦΘΚ: Phi Theta Kappa Honor Society**

Ext. 2245

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, and automatic eligibility to be included on the National Deans' List. 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.

## Office Specialist Training Program

Ext. 2136

The Office Specialist Training program is an intensive job training program designed for those seeking new career opportunities in administrative office support positions. This program covers two of the three required terms for the Office Assistant Certificate program. Students must meet certain requirements in order to apply to this program. Training takes place weekly, Tuesday through Friday from 8 a.m. until 3 p.m. For more information call 503-657-6958, ext. 2136, or email [lynns@clackamas.edu](mailto:lynns@clackamas.edu). Information can also be found on the college's Web site at <http://depts.clackamas.edu/business/office.htm>

## Workforce Development Services

**COMMUNITY CENTER, CC100**

Ext. 2316

Workforce Development Services can assist those who are unemployed, looking for a job, preparing for a career change, or need to upgrade skills.

Workforce Development Services are provided through a federally funded reemployment program. Some services require the participant to meet eligibility and program guidelines. Services include:

- Employment services—job leads, job placement assistance
- Full-service career center
- Job search workshops
- Labor market information
- Career and skill assessment
- Computer classes and computer lab
- Vocational training and skills upgrading

## Community Services

### Art on Campus

#### Alexander Gallery

**NIEMEYER CENTER**

Ext. 2386

The Alexander Gallery, located in the Niemeyer Center, features exhibits of work by artists of regional, national and international reputation. Lectures and presentations are often offered in conjunction with gallery exhibits. Students participate in the design and installation of these exhibitions. Receptions, lectures and presentations are open to the public and often provide an opportunity to meet the artists. For more information visit <http://depts.clackamas.edu/art/> or call the Art Department at ext. 2386.

The Alexander Gallery and the art events that accompany exhibitions are supported by the Alexander Endowment for Art Excellence, Clackamas Community College Foundation, the Margaret Thiele Petti Endowment and the Regional Arts and Culture Council.

#### Pauling Gallery

**LINUS PAULING SCIENCE CENTER**

Ext. 2386

The Pauling Gallery features art exhibits of student work. The annual student show occurs during the spring term and showcases the best student work of the year. Receptions and presentations are open to the public and provide an opportunity to meet the artists.

**CCC CAMPUS**

Ext. 2333

The College has assembled a permanent collection of original art by contemporary Northwest artists. Acquisition is ongoing and directed by the Cultural Arts Committee and the Art Department. Displays may be viewed at the Art Center, Barlow Hall, Bill Brod Community Center, DeJardin Hall, Dye Learning Center, Gregory Forum, Family Resource Center, McLoughlin Hall, Niemeyer Center, CCC Wilsonville Campus, Randall Hall, Rook Hall, Streeter Hall and outdoor pedestrian spaces.

## *CCC Foundation*

**BARLOW HALL, B233**  
Ext. 2402

The Clackamas Community College Foundation is a charitable, non-profit corporation dedicated to raising friends and funds for the college. The Foundation board of directors is a group of business and civic leaders who serve as community ambassadors for the college and its students. Through various fund drives, estate giving, and special events, the Foundation raises money that provides scholarships and grants for students, grants for instructional innovation, and buildings and equipment to strengthen college programs.

## *Child Care*

See Student Services & Activities, page 186.

## *Community Recreation/Facilities*

**RANDALL HALL**  
Ext. 2291

The college hosts several annual events including CCC Takedown Wrestling Tournament, youth baseball and softball camps, volleyball clinics, and soccer camps.

Outdoor facilities at CCC include a jogging/walking trail, six tennis courts, a track, softball/baseball fields, and soccer fields. Most are available for rent when not scheduled for instructional purposes or college athletics. The weight room is open year-round when classes are not scheduled (excluding holidays). Call the Physical Education/Health Office for specific facility use arrangements, hours, and reservation rates.

## *Driver Education*

**CCC HARMONY CAMPUS/OIT METRO CENTER**  
Ext. 3413

The Driver Education program offers 30 hours of classroom instruction and 12 hours of in-car instruction/observation in a dual controlled vehicle. In addition to the program offered on campus, Clackamas Community College offers driver education to high school students throughout Clackamas and Washington counties. Contact your local community school for information about the Driver Education program offered in your area.

## *Facility Use*

**GREGORY FORUM**  
Ext. 2494

The community is invited to hold meetings, programs or special events at Clackamas. Rental fees will be based on current rental rates and/or services required. Call Facilities Reservations for further information.

## *John Inskeep Environmental Learning Center*

**CCC CAMPUS**  
Ext. 2644

The John Inskeep Environmental Learning Center (ELC) is a 3.5 acre site located in the northwest corner of the CCC campus off Beaver Creek Road. Newell Creek bubbles to life here, then flows to the Willamette River through the 1800-acre Newell Creek watershed, the largest intact greenspace in the south metro area.

The ELC offers a shared space for wildlife habitat and environmental education for children, families, and adults.

Our programs include outreach and on-site programs for students in kindergarten through sixth grade, as well as adult and youth community education covering a variety of environmental topics.

We offer professional development workshops for K-12 teachers and administrators.

Students from CCC departments may develop study programs on the site as part of their curriculum. The ELC can help develop cooperative work experience programs both on and off our site. Site tours for schools, day-care centers, garden clubs, home school, and scout groups are offered.

Many interesting volunteer opportunities are available, including teaching in fields from astronomy to zoology, nature interpretation, and site maintenance.

## *Haggart Astronomical Observatory*

Ext. 5665 (LOOK)

Haggart Astronomical Observatory is a public observatory operated by volunteer amateur astronomers under the auspices of the CCC Science Department. The Observatory is open to the public by arrangement and on clear Saturday nights. Programs include viewing objects with a variety of telescopes, including the 24" reflector housed in the tower dome, star walks, solar viewing and star parties. For more information, 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 General Science and Physics.

## Business Services

Anyone involved in business or industry in Clackamas County will find many valuable services at CCC. In addition to regular business courses offered on the main campus, the college offers customized training, seminars, workshops and other business services at CCC satellite locations.

### Business Development Center

**CCC HARMONY CAMPUS**  
**7736 S.E. HARMONY ROAD, MILWAUKIE**  
 503-656-4447  
 Email: [bizcenter@clackamas.edu](mailto:bizcenter@clackamas.edu)

Clackamas Community College, in partnership with the U.S. Small Business Administration and the Oregon Department of Economic and Community Development, offers services to current and prospective small business owners and managers.

Contact the Business Development Center (SBDC) for:

**GREENHOUSE:** A comprehensive 20-week program for new and startup businesses consisting of class lectures and discussions, guest speakers, peer networking and individual business counseling.

**SMALL BUSINESS MANAGEMENT I, II, III:** A three-year program for owners and managers of established businesses to strengthen management skills through individual counseling, practical application and monthly class meetings.

**WORKSHOPS/SEMINARS:** Practical, low-cost training in a variety of areas of interest to small business owners and managers.

**BUSINESS COUNSELING:** Free individual business counseling (including financial advising and loan application assistance) with professional staff. Call 503-656-4447 for an appointment.

**RESOURCE CENTER:** Books, periodicals, videos, and computers with business software and Internet access are available to assist with market research, feasibility studies or business skills development.

**WEBSITE:** [www.bizcenter.org/clackamas](http://www.bizcenter.org/clackamas)

Online links, statewide training schedules and other valuable small business resources available 24/7.

## Customized Training & Development Services

**CCC HARMONY CAMPUS**  
**7616 S.E. HARMONY ROAD, MILWAUKIE**  
 Ext. 3676

Customized Training & Development Services offers training customized to meet the specific needs of local businesses and public agencies.

**Our training specialists can provide the following:**

- A partnership focused on the client's business success
- Customized training programs, degrees and certificates to meet business and industry needs
- Flexible scheduling
- Instruction by facilitators experienced in teaching working adults
- Permanent records with college credit and continuing education units (CEUs)
- Training needs assessment

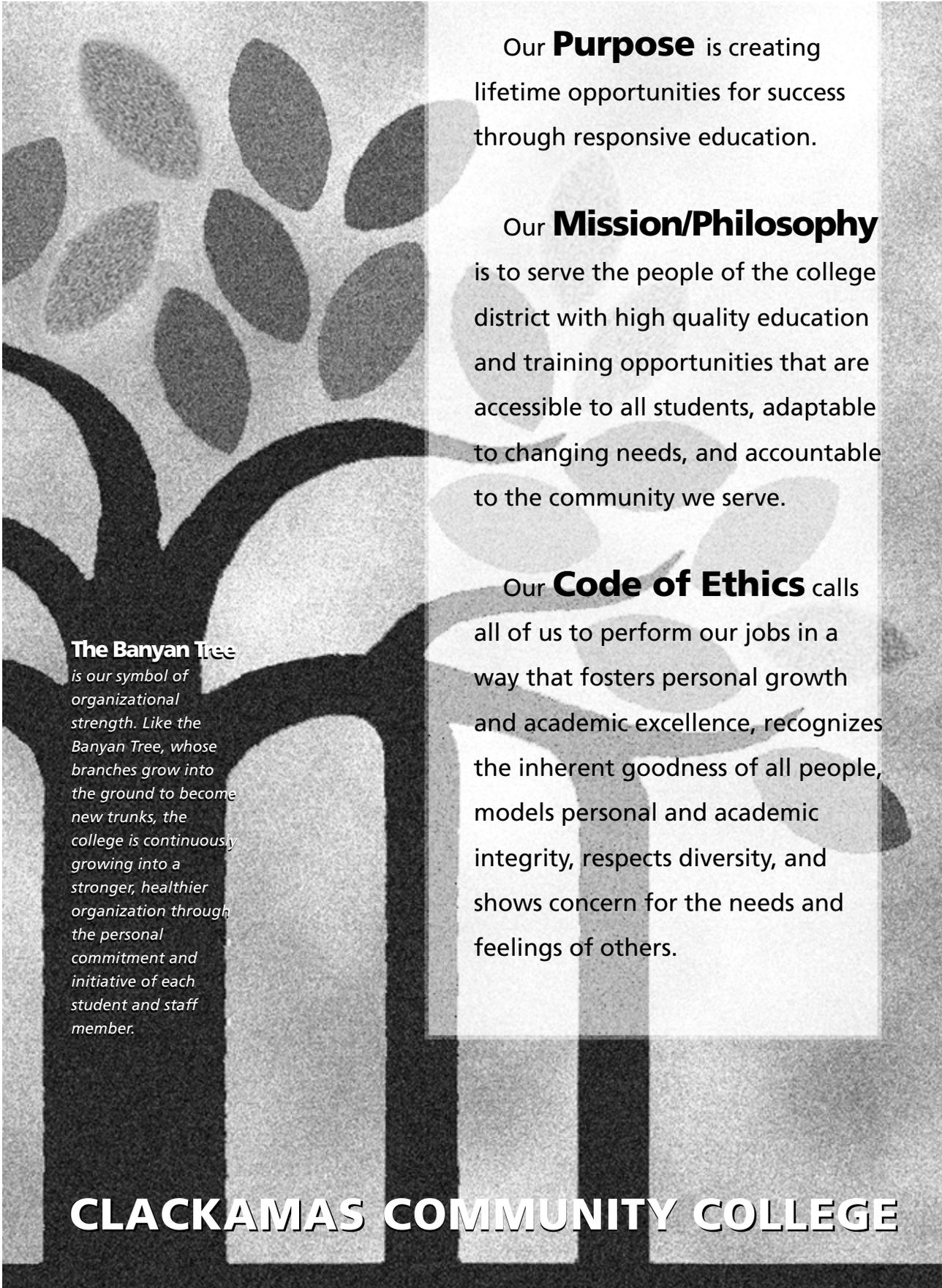
**Customized Training & Development Services delivers training programs in:**

- Communication skills and customer service
- Computer software applications
- Diversity and English as a Second Language
- Human resource development and consulting
- Leadership
- Manufacturing, CAD/CAM and technical training
- Quality and productivity improvement
- Workplace basics and assessment services
- *Train the Trainer*



*Smart Now...Smart Then.*

*College Mission Statement*



**The Banyan Tree**

*is our symbol of organizational strength. Like the Banyan Tree, whose branches grow into the ground to become new trunks, the college is continuously growing into a stronger, healthier organization through the personal commitment and initiative of each student and staff member.*

Our **Purpose** is creating lifetime opportunities for success through responsive education.

Our **Mission/Philosophy** is 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.

Our **Code of Ethics** calls all of us to perform our jobs in a way that fosters personal growth and academic excellence, recognizes the inherent goodness of all people, models personal and academic integrity, respects diversity, and shows concern for the needs and feelings of others.

## *This is the Clackamas Mission.*

### **PURPOSE STATEMENT:**

*“Creating lifetime opportunities for success through responsive education.”*

### **CODE OF 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.

### **MISSION**

The mission of Clackamas Community College is to serve the people of the college district with quality education and training opportunities:

- as a two-year college accredited by the Northwest Association of Schools and Colleges;
- as a publicly supported, community-based organization, governed by a locally-elected Board of Education;
- through programs and courses in professional-technical, liberal arts and sciences (college transfer), basic skills, adult interest, and custom-designed courses and support services;
- 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.

### **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:

#### **VALUES PERTAINING TO OUR COMMUNITY**

**Central Value:** 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;

*Continued*

- 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.

#### **VALUES PERTAINING TO OUR STUDENTS**

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**Central Value:** 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 their 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.

#### **VALUES PERTAINING TO OUR STAFF**

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**Central Value:** 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.

#### **VALUES PERTAINING TO DIVERSITY**

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**Central Value:** 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.

#### **VALUES PERTAINING TO THE ENVIRONMENT**

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**Central Value:** 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 which are 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.

**VALUES PERTAINING TO DECISION-MAKING**

**Central Value:** 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.

**VALUES PERTAINING TO INSTRUCTION**

**Central Value:** Instruction is central to the mission of the college. We must foster a climate that is supportive of students and instructors as key components of the learning process. We seek to develop and maintain opportunities, resources, and strategies that support flexible, responsive instruction to meet diverse and changing student needs in a rapidly evolving educational environment. To accomplish an effective strategic plan for instruction, we recognize the core values that guide our choice of opportunities, and we outline our current priorities as future guides for action. We value:

- local departmental autonomy and academic freedom as indicative of a supportive environment for teaching;
- response to a changing student profile that emphasizes learner-centered teaching, personalized instruction, and a variety of teaching and learning styles;

- diversity in instructional programs and offerings that educate the whole student;
- leadership of faculty, together with staff and students, in instructional planning;
- interdisciplinary and college-wide sharing, communication, and teamwork;
- challenging students and encouraging lifetime learning and responsible citizenry;
- improved student access and success through annual planning and sound student placement;
- appropriate use of technology in support of instructors and instruction;
- innovation, risk-taking, and dissent in the pursuit of quality instruction;
- a focus on quality rather than growth;
- balancing productivity with the need for faculty and curricular development time;
- continued development of connections between Clackamas Community College and our educational and business partners;
- maintaining a climate that supports “us” rather than “us/them.”

*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.*

## The Clackamas Guarantee

### COLLEGE TRANSFER

Clackamas Community College will refund the tuition of any CCC graduate for any transfer course work passed at CCC with a “C” grade or better, if that earned course credit does not qualify for transfer to an Oregon public college or university within two years of graduation from Clackamas.

### PROFESSIONAL/TECHNICAL EDUCATION

Clackamas Community College will provide tuition-free skill training of up to 16 credits to any graduate of an Associate of Applied Science degree program in professional technical studies judged by the employer as lacking in technical job skills normally expected of an entry-level employee.

#### SPECIAL CONDITIONS:

##### *Professional/Technical Studies*

###### *Degree*

- The graduate must have earned an Associate of Applied Science degree in a college-recognized professional technical program as indicated on the student transcript.

###### *Employment*

- The employment must be full-time and the job must be certified by the college Career and Employer Resource Center as directly related to the graduate's program of study.
- Initial date of employment of the graduate must be within one year after graduation.
- The employer must certify in writing that the employee is lacking specific job entry-level skills, and must specify the area(s) of skills deficiency within six months of the graduate's initial employment.

###### *Retraining*

- Skill retraining will be limited to 16 credits and to enrollment in courses regularly offered by CCC.
- The skill retraining must be completed within one academic year.
- The employer, graduate, college counselor and the appropriate department chairperson will develop an educational plan which specifies the courses constituting the credit hours of further retraining.
- Failure, withdrawal, or audit of a retraining course counts toward the 16 credit limit.
- The graduate or the employer will pay the cost of fees, books, supplies, uniforms, and other related costs. The college will waive tuition.

### TUITION REBATE

Clackamas Community College will freeze tuition rates for students who graduate from CCC within three years of their beginning term. Any tuition increase levied by the college during those three years will be refunded to the student upon graduation.

#### SPECIAL CONDITIONS:

##### *Qualifications*

A student must:

- complete all degree course work at CCC
- graduate within three successive years of initial enrollment
- apply for tuition rebate within one year after graduation

##### *General guidelines (no exceptions to the following)*

- A student must earn the degree within three successive years of initial enrollment at CCC.
- Any refund is determined solely on the amount of tuition increase imposed after the initial term of the three successive years. For students whose residency changes during their enrollment, the rebate will be based on the tuition paid for each term. No rebate will be made for tuition paid towards the residency differential.
- A tuition refund cannot be claimed for any term during which a student received financial aid or direct sponsorship for tuition, except loans.
- All course work for a degree must be completed at CCC. (Transfer students do not qualify.)
- The refund applies only to the first 93 credits needed to complete a degree program.
- Only one refund per student is allowed.
- Application for a refund must be made within one year of the student's graduation date.

##### *For further information*

Call Clackamas Community College Registrar's Office at 503-657-6958, ext. 2262.

## 2004-2005 STATISTICS:

**HEADCOUNT**

Headcount	26,293
Full-time students	1,801
Part-time students	13,511
Non-credit students	10,981
Full-time Equivalence	7,659
Average age, all students	32 years
Average age, full-time students	25 years
Females	12,033 (46%)
Males	13,184 (50%)
Racial/ethnic minorities in student body	13.2%
Students receiving financial aid	2,590
Average amount of aid per student	\$3,722
Total amount of aid received	\$9,639,000
Degrees/certificates awarded	721
Graduation rate (2001 cohort)	17%
Transfer rate (2001 cohort)	36%

For more information on these and other college statistics, contact the Research Office at 503-657-6958, ext. 2313.

*CCC at a Glance*

Numbers reflect 2004-05 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 356,250 (July 1, 2004)  
District (76.5%) = 272,531

**ENROLLMENT**

**2004-05 Headcount:** 26,293

**2004-05 Full-time Equivalence:** 7,659

**PROGRAMS**

**Professional/Technical:** CCC offers one-year Certificate of Completion and two-year Associate of Applied Science degree programs in 30 professional/technical career areas and General Studies.

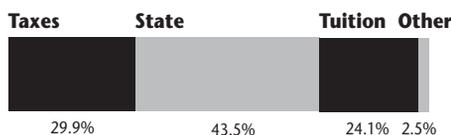
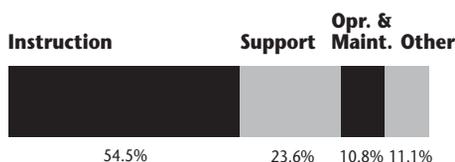
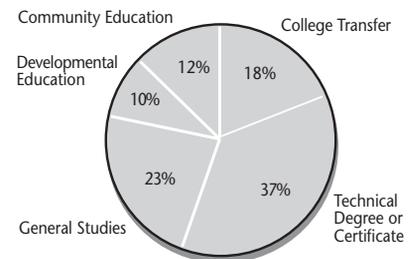
**College Transfer:** CCC offers the two-year Associate of Arts Oregon Transfer degree, completion of which allows the student to meet the general education requirements of the baccalaureate degree program, and have junior standing for the purposes of admission and registration, at any Oregon University 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, Life & Career Options, and Young Parent Opportunity Program.

**Community Education:** CCC offers credit and non-credit personal interest and enrichment courses through district community schools at more than 100 locations.

**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**  
Earl "Joe" P. Johnson  
**Board of Education**  
Ron Adams  
Jean Bidstrup  
Chuck Clemans  
Carlotta Collette  
Judith Ervin  
Ross Smith  
Larry Wright

**BUDGET  
GENERAL FUND RESOURCES 2005-2006****GENERAL FUND EXPENDITURES****ENROLLMENT BREAKDOWN  
BY STUDENT INTENT**





*Smart Now...Smart Then.*

*Faculty & Administration*

**CLACKAMAS COMMUNITY COLLEGE  
BOARD OF EDUCATION**

	Term ends
Larry Wright	2009
Ron Adams	2007
Judy Ervin	2009
Chuck Clemans	2007
Carlotta Collette	2009
Jean Bidstrup	2009
Ross Smith	2009

**CLACKAMAS COMMUNITY COLLEGE  
PRESIDENT**

Dr. Earl P. "Joe" Johnson

**FACULTY & ADMINISTRATION**

**Acord, Donna (2003)**  
Dean/Extended Learning Center  
B.S. University of Oregon  
M.S. Stanford University

**Allen, William H. (1996)**  
Computer Science  
B.A. Willamette University  
B.S. University of Utah  
M.B.A. Portland State University

**Andersen, David (1997)**  
Art  
M.F.A. Brigham Young University

**Anderson, Janet (1990)**  
English  
A.S., A.D.N., R.N. Clark College  
B.A. University of California  
M.A. Portland State University

**Arata, Charles (1994)**  
Operations Manager, Campus Services  
A.G.S. Clackamas Community College

**Arter, David B. (1986)**  
Physical Science  
B.A. University of California  
Ph.D. University of Illinois

**Ashbaugh, Richard (1990)**  
Criminal Justice  
B.S. Parsons College  
M.A. Western Seminary

**Atkins, Sarah (2004)**  
Nursing  
B.S.N. Oregon Health Science University  
M.S. University of Portland

**Austen, Wayne (1987)**  
Auto Body  
A.S. Portland Community College  
State of Oregon Vocational Certification

**Austin, Joe (2004)**  
Dean/Chief Information Officer  
B.S. University of Redland

**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

**Bergman, Barry F. (1989)**  
Mathematics  
B.A. Reed College  
M.S. San Jose State University

**Bjerre, Irma C. (2000)**  
International Education  
B.A. University of Nevada  
M.A. University of Nevada

**Blessman, David G. (1998)**  
Counseling  
B.S. Portland State University  
M.S.Ed. Portland State University

**Bohach, John (2004)**  
Automotive  
Master Medium Technician  
Professional Technical Teacher License

**Bown, Jennifer P. (2003)**  
Life Science  
B.S. University of Nevada, Reno  
M.S. University of Nevada, Reno

**Bradley, David A. (1999)**  
Automotive Programs  
A.G.S. Clackamas Community College

**Brennan, Kelly J. (1996)**  
Forensics, Speech  
A.A./A.S. Clackamas Community College  
B.S. Portland State University  
M.A. Washington State University  
Ph.D. Capella University

**Briare, William V. (1996)**  
Dean, Humanities & Social Science  
Division  
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

**Brown, Melinda Jo (1992)**  
Student Activities  
A.A. Clackamas Community College  
B.S. Oregon State University  
M.S.T. Portland State University

**Brown, Stephen (1980)**  
Physics  
B.S. U.S. Merchant Marine Academy  
M.S. Portland State University

**Bryant-Trerise, James L. (1998)**  
English  
B.A. University of California  
M.A. Claremont Graduate School

**Burnell, Carol (2004)**  
English  
B.A. San Francisco State University  
M.A. Portland State University

**Caldera, Sue (2004)**  
Welding/Manufacturing  
Welding Certificate, Mt. Hood  
Community College

**Campbell, David (1981)**  
Counseling  
B.A. Grove City College, Pennsylvania  
M.S. University of Buffalo, New York

**Cannon, Barbara (2006)**  
Nursing  
B.S.N. Montana State University  
M.N. Oregon Health Science University

**Carey, Kimberly (2005)**  
Director, Administrative Computing &  
Database  
B.S. University of Idaho

**Carino, Debra A. (2001)**  
Computer Science  
B.A. Boston University  
M.S. California State University

**Cate, Caroline L. (1990)**  
English as a Second Language  
B.A. Portland State University  
M.Ed. Oregon State University

**Christophersen, Kristin A. (2000)**  
Sociology  
B.S. Portland State University  
M.S. Portland State University

**Cline, Lonnie (1981)**  
Music  
B.M.E. Idaho State University

**Coffey, Amanda L. (1998)**  
English  
B.A. Virginia Commonwealth University  
M.F.A. Arizona State University

**Connett, Dian (1980)**  
Vice President/Instructional Services  
B.S. Ohio State University  
M.S. Ohio State University  
Ed.D. Portland State University

- Cook, C. LeRoy (2003)**  
Drafting Technology  
B.S. University of Montana  
M.H.R.O.D. University of San Francisco
- Cornelius, Trista G. (2002)**  
English  
B.A. Pacific University  
M.A. Portland State University
- Corona, Maria (2006)**  
Dental  
A.S. Santa Barbara City College  
Certified Dental Assistant  
EFDA, EFODA and Radiology Certificate
- Cross, Douglas B. (2001)**  
Computer Science  
B.S. University of Oregon  
M.S. University of Oregon  
M.S. California State University,  
Hayward
- Curry, Merlin (2001)**  
Emergency Medical Technology  
Oregon Certified Paramedic  
Certified AHA Advanced Cardiac Life  
Support Instructor  
Certified Pediatric Advanced Life  
Support Provider  
Certified Prehospital Trauma Life  
Support Provider
- Davis, Ryan M. (2006)**  
English  
B.S. Western Oregon State College  
M.A. Mississippi State University
- Darris, M. Dean (1994)**  
Political Science  
B.S. Portland State University  
M.S. Portland State University  
Ph.D. Berne University, West Indies
- DeFontes, Gale (1979)**  
Manager, Facilities and Information/  
Switchboard/Evening Office  
A.S. Clackamas Community College  
B.A. Marylhurst University
- DelGatto, Robert (2003)**  
Manufacturing
- DeSau, Carol (2001)**  
Bookstore  
B.A. Portland State University
- DeVenney, Jean E. (1999)**  
Counseling  
B.S. Southern Oregon State College  
M.S. Portland State University
- Dickinson, James (1980)**  
Astronomy  
B.S. Oregon State University  
M.S. Portland State University
- Dickson, David (1980)**  
Vice President/College Advancement  
B.A. Stanford University  
M.S. University of Oregon
- Dodge, Trevor (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 Sciences University
- Donelson, Anne (1998)**  
Director/Public Affairs  
B.S. Portland State University
- Drebin, Diane (1998)**  
Dean/Enrollment Services Division  
B.A. Marylhurst University  
M.S. Portland State University
- Durham, Linda (1996)**  
Skills Development  
B.A. Whittier College, California  
M.S. Ed. Oregon State University
- Eaton, Leonard G. (2001)**  
Computer Science  
B.S. Oregon State University  
M.Ed. Portland State University
- Erekson Varga, Amy (2006)**  
Annual Fund Manager  
B.A. Willamette University
- Espino, Richard (1999)**  
Life Science  
A.A. Clackamas Community College  
Doctor of Chiropractic, Western States  
Chiropractic College
- Falkenstein, Peggy (1996)**  
Customized Training & Development  
B.A. Marylhurst College  
M.P.A. Portland State University
- Fallon, Kathleen S. (2001)**  
English as a Second Language  
B.S. Oregon State University  
M.A. Oregon State University
- Fiskum, Paul K. (1976)**  
Physical Education  
B.S. Oregon College of Education  
M.S. Portland State University
- Flippo, Ida (1997)**  
Criminal Justice  
B.S. Southern Oregon State College  
M.A.T. Willamette University
- Flowers, Jackie (1997)**  
History  
B.A. Appalachian State University  
B.A. University of Tennessee  
M.A. University of South Carolina  
Ph.D. University of South Carolina
- Ford, Loren (1984)**  
Psychology  
B.A. California State University,  
Long Beach  
M.A. California State University,  
Long Beach
- Francis, Eden A.R. (2003)**  
Chemistry  
A.A.S. Cottey College  
B.S. Linfield College  
M.S. University of Oregon
- Frank, William W. (1998)**  
Customized Training & Development  
B.A. University of California  
M.S. Eastern Washington University
- Giltz, R. Scott (1996)**  
Dean/Technical Career Education  
Division  
State of Oregon Vocational Certification  
A.A.S. Clackamas Community College
- Godfrey, Jan A. (1992)**  
Dean/Counseling/Career Planning/  
Student Activities  
B.A. Fresno State College  
M.S.W. Portland State University
- Goldstein, Alice (2000)**  
English as a Second Language  
A.B. Stanford University  
M.A. Portland State University  
J.D. University of California, Berkeley
- Grabill, Jr., James R. (2002)**  
English  
B.F.A. Bowling Green State University  
M.A. Colorado State University  
M.F.A. Colorado State University
- Gray, Kate (1992)**  
English  
B.A. Williams College  
M.F.A. University of Washington
- Griffiths, David (2004)**  
Director, Workforce Development  
B.S. University of Georgia  
M.Ed. University of Georgia
- Grimaldi, Hugo (1997)**  
Business  
B.S. Loyola University of Louisiana  
M.B.A. University of Portland
- Grossmann, Sandra J. (1998)**  
Psychology  
B.A. Metropolitan State College  
M.S. Portland State University

- 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
- Hamm, Paula L. (2001)**  
Education  
B.A. Marylhurst College  
M.A. University of Illinois
- Hanson, Catherine (2001)**  
Skills Development  
B.A. Eastern Oregon University  
M.S. Portland State University
- Harber, Renee (2004)**  
Horticulture  
B.S. Ball State University  
Ph.D. Oregon State University
- Harlow, Franklin I. (1977)**  
Speech  
B.S. Southern Oregon State College  
M.A. University of Northern Colorado
- 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
- Hearing, Sylvia J. (1998)**  
Customized Training & Development  
B.A. Portland State University  
M.B.A. City University
- Helbig, Ronald E. (1992)**  
Building Construction  
State of Oregon Vocational Certificate  
A.S. Clackamas Community College
- Herman, Brenda (1987)**  
Mathematics/Computer Science  
B.A. Lenoir Rhyne College, North Carolina  
M.S. University of North Carolina
- Holcomb, David K. (2000)**  
Director/Bookstore  
B.S. Marylhurst University
- Hoover, Sarah (2004)**  
Geology  
B.S. North Carolina State University  
M.S. University of Oregon(2004)
- Howley, Elizabeth A.M. (1983)**  
Horticulture  
A.S. Stockbridge School of Agriculture  
B.S. University of Massachusetts
- Jackson, Jr., James E. (1991)**  
Director/Health/Physical Education/  
Athletics  
Title 9 Coordinator  
B.S. U.S. Naval Academy  
B.A. University of Iowa  
M.S.T. Portland State University
- Jackson, Mary Jo (1998)**  
Director/Financial Aid  
B.S. University of Oregon  
M.S. Portland State University
- Johnson, Earl "Joe" P. (2001)**  
President  
B.A. University of the Pacific  
M.L.I.R. Michigan State University  
Ph.D. University of California, Berkeley
- Jones, Michael L. (1988)**  
Drafting Technology  
A.S. Chemeketa Community College
- Jones, Thomas G. (1986)**  
Small Business Development Center  
A.A. Brookdale City College,  
New Jersey  
B.A. Thos. A. Edison College of  
New Jersey  
M.S. Marylhurst College  
Ph.D. Walden University
- Junquera-Santana, Henry (2004)**  
Foreign Language  
B.A. San Diego State University  
M.A. San Francisco State University  
M.B.A. National University
- Keala, Kelly (2004)**  
Drafting  
B.S. University of Utah
- Keeler, Robert (1997)**  
Anthropology  
B.A. University of North Carolina  
M.A. Idaho State University  
Ph.D. University of Oregon
- Ketchum, Ken R. (2000)**  
Automotive Technology  
A.G. Portland Community College  
A.A.S. Portland Community College  
Vocational Education Teaching Degree,  
Portland Community College
- Kop, Barry (2005)**  
Life Science  
B.S. University of Oregon  
B.A. University of WA.S.hington  
Doctor of Chiropractic, Western States  
Chiropractic College
- Korfhage, Julie (2003)**  
Drafting  
A.S. Clackamas Community College
- Kyser, Carrie L. (2001)**  
Mathematics  
B.S. Eastern Michigan University  
M.S. Cleveland State University
- Landauer, Edwin G. (1988)**  
Engineering Sciences  
B.S. Portland State University  
M.S.T. Portland State University  
M.S. Montana State University  
M.S. University of Central Florida
- Laugle, Thomas N. (1990)**  
Apprenticeship/Wildland Fire/ESH  
A.A. Clackamas Community College  
A.A.S. Portland Community College  
B.A. Marylhurst University
- Leach, William W.**  
Dean/Campus Services  
B.A. California State College Stanislaus
- Leuck, Jay (2003)**  
Automotive  
A.S. Southwestern Oregon Community  
College  
B.S. OIT
- Lewandowski, Kurt L. (1990)**  
Mathematics  
B.S. Southern Utah State College  
M.S. Oregon State University
- Lewis, Alice (2003)**  
Speech  
A.A. Seattle Central Community College  
B.A. Portland State University  
M.A. Portland State University
- Lewis, Eric W. (1993)**  
Psychology  
B.A. California State Fullerton  
Ph.D. University of Nevada
- Lewis, John C. (1982)**  
Water Quality Technology  
B.S. Portland State University  
M.S. University of Idaho
- Locke, Wesley M. (1998)**  
Manufacturing Technology  
A.S. Clackamas Community College
- Lockwood, Rick (2005)**  
Automotive  
A.A. College of Sequoias  
ASE Master Tech, L1

- Lund, Dena (1978)**  
Purchasing Assistant Administrator  
A.A. Clackamas Community College
- Mach, Susan (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. Inglis (1995)**  
Skills Development  
B.S. Oregon State University  
M.S. University of North Texas  
Ed.D. Oregon State University
- Martineau, James B. (2001)**  
Health/Physical Education  
B.S. Southern Oregon University  
M.S. Western Oregon University
- Martinez, Guadalupe (2000)**  
Counseling  
B.A. Oregon State University  
M.A.I.S. Oregon State University
- Martini, Karen J. (1999)**  
Director of Development  
B.S. Portland 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 (2004)**  
Medical Assistant/Health Science  
A.S. College of DuPage  
Oregon EMT - Intermediate
- McFarland, Patricia G. (2000)**  
History  
B.A. University of Southern Mississippi  
M.A. University of Southern Mississippi  
Ph.D. Louisiana State University
- McHone, Keoni (2004)**  
PE/Cross Country Coach  
B.S. Western Oregon University  
M.S.Ed. Western Oregon University
- McIlveen, Patricia J. (1998)**  
Family/Human Services  
B.S. Western Michigan University  
M.Ed. Florida Atlantic University  
Ed.D. Portland State University
- Meuser, Ellis (2004)**  
Skills Development  
B.Th. Northwest Christian College  
M.S. Western Oregon University
- Middendorff, Carol A. (1983)**  
Business  
A.A. Southwestern Oregon Community College  
B.A. Oregon State University  
M.S.T. Portland State University
- Miller, David W. (1998)**  
International Education  
B.A. University of Montana  
B.A. Portland State University  
M.A. Portland State University
- Miller, Nick (2003)**  
Automotive Technology  
A.A.S. Clackamas Community College
- Mills, David J. (2001)**  
Music  
A.A. Mt. Hood Community College  
B.S. Westminster College  
M.M.E. Lewis & Clark College
- Mingo, Andrew (2004)**  
English  
B.A. University of Nevada  
M.F.A. San Diego State University
- Misley, Robert R. (1986)**  
Biology  
A.A. Clackamas Community College  
B.S. Eastern Oregon State College  
M.A.T. Lewis & Clark College
- Mitchell, Maureen G. (2002)**  
Dean, Health Sciences Division  
R.N. Algonquin College  
R.N. Ottawa Civic Hospital  
B.S.C.N. Brandon University
- Molatore, Dominic (1985)**  
Computer Science  
B.S. Oregon State University  
B.S.C.S. Portland State University
- Moller, Steffen A. (1998)**  
Computer Science  
B.A. Union College  
M.A. Andrews University
- 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, Robert J. (1990)**  
Horticulture  
B.S. University of Idaho  
M.S. University of Idaho
- Nelson, Tracy (2004)**  
HPE/Head Women's Soccer Coach  
B.S. University of Portland  
M.Ed. Portland State University
- Nielsen, Lisa (2003)**  
Skills Development  
B.A. University of Oregon  
MEd Pennsylvania State University
- Nopp, Catherine (2004)**  
Special Projects Manager, Workforce Development  
B.A. Washington State University  
M.A. Washington State University
- Nordstrom Hull, Rhonda (2003)**  
Mathematics  
A.S. Clackamas Community College  
B.S. Oregon State University  
M.S. Portland State University
- Ogden, Rebecca (1996)**  
Skills Development  
B.S. Portland State University  
M.S. Southern Oregon State College
- Olds, John P. (1986)**  
Business  
B.S. Whitworth College  
M.B.A. University of Oregon  
Mstr/Tax Portland State University  
Juris/Dctr University of Washington Law School
- O'Toole, Gayle (1983)**  
Customized Training & Development  
B.S. Arizona State University  
M.A. Antioch University
- Patrick, Tanya (1994)**  
Business  
B.A. California State University  
M.S.T. Portland State University
- Pearson, Kirk (1986)**  
Director/Campus Services
- Ponce, Joanna (2004)**  
ESL / Vocational  
B.A. San Francisco State University  
Ed.M. Oregon State University
- Reilly, Nicole L. (2002)**  
Nursing  
B.S.N. Clemson University  
M.N. University of Washington
- Robinson, Robin A. (1989)**  
Physical Education  
B.S. Willamette University  
M.A.T. Lewis and Clark College

- Robuck, Chris (2005)**  
Dean/Business Office/Controller  
B.S. University of Montana  
M.B.A. Western State College of  
Colorado
- Rose, Brian (2005)**  
Music
- Rueb, Richard (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
- Sager, Don (1988)**  
Supervisor/Campus Services
- Sanchez, Camilo (2005)**  
Skills Development  
B.A. Mexico State
- Schneider, Karen T. (2001)**  
Nursing  
Nursing Diploma, St. Vincent School  
of Nursing  
B.S.N. Oregon Health Sciences  
University  
M.S.N. University of Portland
- Schlessman, Heather (2005)**  
Nursing  
B.S.N. William Jewell College  
M.S. University of Missouri, Kansas City
- Seaman, Lynn (1988)**  
Business  
B.S. Oregon State University  
Ed.M. Oregon State University
- Shackelford, Alan M. (2002)**  
Economics  
B.S. Portland State University  
M.S. Portland State University
- Shea, Tim (1998)**  
Small Business Development Center  
A.A. Santa Barbara City College  
B.S. Portland State University  
M.B.A. Portland State University
- Smith, Kathleen (1992)**  
College/Foundation Board Executive  
Assistant  
A.S. Clackamas Community College
- Smith, Michelle J. (2002)**  
Nursing  
B.S.N. University of Portland  
M.S. University of Portland
- Smith-English, David (1995)**  
Theatre  
B.A. Lewis & Clark College  
M.A.T. Lewis & Clark College
- Sprehe, Tara (2001)**  
Registrar  
B.A. University of Oregon  
M.S. Miami University
- Stone, Karen A. (1983)**  
Director/Customized Training  
& Development Services  
B.A. Stanford University  
M.S. Marylhurst
- Strader, Stuart (2005)**  
Welding/Manufacturing  
AWS Certified Welder  
ACWI Welding Inspector
- Strickland, Christina (1983)**  
Life Science  
A.S. Umpqua Community College  
B.S. Oregon State University  
M.S. Texas Women's University
- Stubblefield, Karen (1998)**  
Director/Human Resources  
Section 504 Coordinator
- Taylor, Kathleen A. (1991)**  
Mathematics  
B.S. University of Portland  
M.A.T. University of Portland
- Thorn, Carol A. (2002)**  
Nursing  
B.S.N. Oregon Health Sciences  
University  
M.S. University of Portland
- Topping, Robert P. (1993)**  
Building Construction/UTA/ERM  
A.A. Portland Community College  
B.S. Portland State University  
M.Ed. Oregon State University
- True, J. Rick (1995)**  
Art  
B.A. University of New Mexico  
M.F.A. Portland State University
- Tuffli, Theresa A. (1982)**  
Dean/Wilsonville Campus/Harmony  
Campus  
A.S. Clackamas Community College  
B.A. George Fox College  
M.B.A. George Fox College
- van der Bijl, Baldwin (1978)**  
Dean, Business, Math & Sciences  
Division  
B.A. University of California  
M.S. California State University
- Vogt, Linda M. (1986)**  
Student Publications/Journalism  
B.S. University of Oregon  
M.A.T. Lewis & Clark College
- Wakeling, Thomas W. (1999)**  
Music  
B.S. Portland State University  
M.S.E. University of Portland
- Wand, Helen (2004)**  
Clinical Lab Assistant  
B.S. Marylhurst University
- Wanner, Paul J. (1992)**  
Manufacturing Technology  
A.A. Clackamas Community College  
State of Oregon Vocational Certificate
- Ward, David W. (2001)**  
Drafting Technology  
A.S. Clackamas Community College  
A.A. Clackamas Community College  
Oregon Department of Education  
Certificate
- Waters, William (2004)**  
Business  
B.S. Portland State University  
MB.A. University of Oregon
- Whitten, Christopher (2006)**  
Theatre  
B.S. Western Oregon University
- Widerburg, Allen (1987)**  
English  
B.A. University of Utah  
M.A. Portland State University
- Wilebski, Yvonne M**  
Skills Development  
B.S. University of Oregon  
M.S.W. Portland State University
- Williams, Molly (1980)**  
English as a Second Language  
B.A. Lewis & Clark College  
M.A. Portland State University
- Wolfson, Ellen (1985)**  
Counseling  
B.S. Portland State University  
M.S.W. Portland State University
- Woods, Kathleen M. (1983)**  
Physical Education  
B.S. Oregon State University  
M.Ed. Oregon State University
- Wynia, Marilyn A. (1979)**  
Physical Education  
B.S. Oklahoma State University  
M.A. Oklahoma State University
- Yannotta, Mark A. (1998)**  
Mathematics  
B.S.E. Southeast Missouri State  
M.A. University of Missouri
- Zuelke, William (1997)**  
Counseling  
B.A. Gonzaga University  
M.Div. Weston School,  
Cambridge, MA  
M.S. Loyola College



*Smart Now...Smart Then.*

*Index*

## *Glossary of terms*

### **AAOT**

The Associate of Arts Oregon Transfer Degree is a standardized, two-year curriculum that guarantees junior standing for the purpose of registration upon admission to a four-year, Oregon public university.

### **Catalog**

Each academic year has a new catalog. The catalog describes all the courses offered at CCC, programs available, and degree and certificate requirements. Students will be evaluated for degree and/or certificate requirements under the current catalog year unless a request for a prior catalog year is indicated on the petition to graduate form. The Catalog is valid for five years.

### **Computer Literacy**

A course marked with “[C]” meets the CCC computer literacy requirement for a professional technical program.

### **Corequisite**

A second, related course in which a student must be simultaneously enrolled, in addition to the primary course.

### **Course**

A subject or an instructional subdivision of a subject, usually offered during a single term.

### **Credit**

A unit of measure granted by the state for instructional hours taken.

### **Elective**

A course which may be selected from a list of alternatives in order to fulfill requirements.

### **Financial Aid**

Assistance for students enrolled at least half time (6 credits). It helps cover school expenses which include tuition, fees, books, supplies and some living expenses.

### **Full-time**

Carrying a credit load of at least 12 credits.

### **GPA**

Grade Point Average, based on the number of credits earned and the grades received.

### **Instructor consent**

Written permission from the course instructor, granted prior to enrollment.

### **Online Advisor**

An electronic, advising service that provides information on all Oregon Community Colleges. Students can obtain important information and request assistance from Academic Advisors at the different community colleges. The Web address for this site is [www.oregoncomcolleges.org](http://www.oregoncomcolleges.org)

### **Open entry/open exit**

Some courses may be entered at any time before the last day of the eighth week of a term, and exited any time after completing course requirements.

### **Petition to Graduate**

This form should be turned in at least two terms prior to graduation. The Registrar’s Office will then complete and mail out a degree evaluation form, identifying the courses that have been completed and the courses that are still needed for the degree or certificate.

### **Placement test**

A basic assessment that is used to determine your skills in writing, reading, math, and computer literacy. It is designed to ensure your success by helping us to place you at the appropriate course levels.

### **Prerequisite**

A skill-building course or activity that must be successfully completed prior to enrolling in advanced courses.

### **Recommended**

A suggested competence that will enhance a student’s classroom success.

### **Schedule of Classes**

A booklet published each term that tells which courses are being offered, where they meet, what time they meet, and who teaches them.

### **Term**

Approximately one quarter of the academic year. Fall, winter, and spring terms are 11 weeks. Summer term runs for either eight or eleven weeks (depending on the course).

### **Transcript**

A copy of a student's permanent record that lists the courses and grades received by the student taken at a particular institution. When transferring, a transcript must be requested from each institution you attended. Contact the Registrar's Office for more information.

### **Variable Credit**

Some courses are offered as individualized learning for which a range of credits may be earned.

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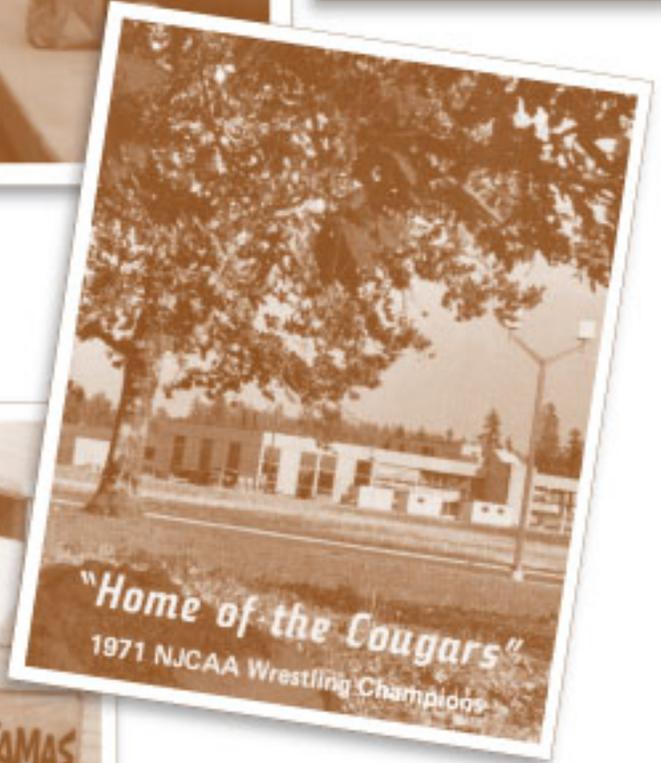
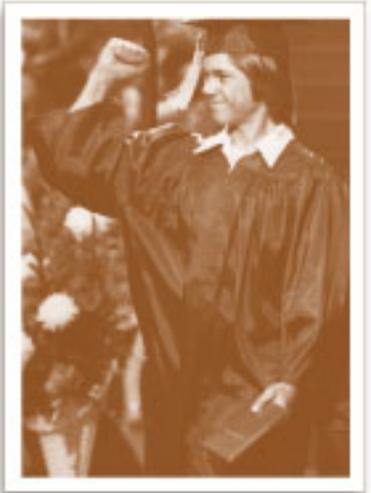
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