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

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

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

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

Enjoy your educational journey.

President Joanne Truesdell
CCC, Class of 1982
## Dates to Remember 2013-2014

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

<table>
<thead>
<tr>
<th><strong>SUMMER TERM</strong></th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classes Begin</td>
<td>Monday, June 24</td>
</tr>
<tr>
<td>Independence Day Holiday (College closed)</td>
<td>Thursday, July 4</td>
</tr>
<tr>
<td>Labor Day Holiday (College closed)</td>
<td>Monday, September 2</td>
</tr>
<tr>
<td>Term ends</td>
<td>Thursday, September 5</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th><strong>FALL TERM</strong></th>
<th>2013</th>
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<tr>
<td>In-Service week (College closed Wednesday)</td>
<td>September 23-27</td>
</tr>
<tr>
<td>Classes begin</td>
<td>Monday, September 30</td>
</tr>
<tr>
<td>Veterans' Day Holiday (Observed Monday-college closed)</td>
<td>Monday, November 11</td>
</tr>
<tr>
<td>Thanksgiving Holiday (College closed)</td>
<td>Thirs.-Fri., November 28-29</td>
</tr>
<tr>
<td>(Wednesday evening classes, beginning at 4 p.m. or later, are canceled prior to Thanksgiving.)</td>
<td></td>
</tr>
<tr>
<td>Finals week</td>
<td>Mon.-Sat., December 9-14</td>
</tr>
<tr>
<td>Term ends</td>
<td>Saturday, December 14</td>
</tr>
<tr>
<td>Holiday (College closed)</td>
<td>Tuesday-Wednesday, Dec. 24-25</td>
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<tr>
<td>New Year's Day Holiday (College closed)</td>
<td>Wednesday, January 1</td>
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<table>
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<th><strong>WINTER TERM</strong></th>
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<tr>
<td>Classes begin</td>
<td>Monday, January 6</td>
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<tr>
<td>Martin Luther King Jr. Holiday (College closed)</td>
<td>Monday, January 20</td>
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<tr>
<td>Skills Contest</td>
<td>Thursday, February 27*</td>
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<tr>
<td>(Day classes canceled at the Oregon City campus only. Evening classes, beginning at 4 p.m. or later, held as scheduled.)</td>
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</tr>
<tr>
<td>* Date to be reviewed.</td>
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<tr>
<td>Finals week</td>
<td>Mon.-Sat., March 17-22</td>
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<tr>
<td>Term ends</td>
<td>Saturday, March 22</td>
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<tr>
<td>Spring Break</td>
<td>March 24-28</td>
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<th><strong>SPRING TERM</strong></th>
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<tr>
<td>Classes begin</td>
<td>Monday, March 31</td>
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<tr>
<td>Memorial Day Observance (College closed)</td>
<td>Monday, May 26</td>
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<tr>
<td>Finals week</td>
<td>Mon.-Saturday, June 9-14</td>
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<tr>
<td>GED &amp; Adult High School Diploma Graduation Ceremony</td>
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<tr>
<td>College Certificate &amp; Degree Graduation Ceremony</td>
<td>Friday, June 13</td>
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<tr>
<td>Term ends</td>
<td>Saturday, June 14</td>
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</tbody>
</table>

*Please note: The information in this catalog reflects current programs, requirements, and costs. These are all subject to change, and Clackamas Community College reserves the right to make any necessary revisions in the information contained here without prior notice.*
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Clackamas Community College is accredited by the Northwest Commission on Colleges and Universities. Accreditation of an institution of higher education by the Northwest Commission on Colleges and Universities indicates that it meets or exceeds criteria for the assessment of institutional quality evaluated through a peer review process. An accredited college or university is one which has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

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

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

Northwest Commission on Colleges and Universities
8060 165th Avenue N.E., Suite 100
Redmond, WA 98052
(425) 558-4224
www.nwccu.org
who we are

purpose
Creating lifetime opportunities for success through responsive education

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

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

• **Academic Transfer** - We provide education that results in successful academic transfer to a four-year institution.

• **Career and Technical Education** - We provide education and training that reflect the economic needs of the community and region and lead to successfully attaining employment.

• **Essential Skills** - We provide education that supports high school completion and learning English, and develops essential skills such as mathematics, reading and writing.

• **Lifelong Learning** - We provide diverse special events, enrichment programs, and continuing education opportunities and develop strong partnerships with our community agencies.

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.

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

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

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

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

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

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

THE COLLEGE ENDEAVORS TO BE ACCOUNTABLE BY:

• maintaining appropriate standards of performance for all programs, courses and services
• involving citizens in the budget process, the planning process, and in program development and review
• conducting regular performance reviews for all college staff members
• continuing efforts to make the most effective use of college resources
• evaluating the effectiveness of educational programs and services by measuring student outcomes.

ethics

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

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

goals

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

Breadth of service
by responding effectively to the needs of our varied constituencies.

Quality of education
by striving to achieve the highest quality of teaching, learning and student success.

Commitment to values
by aligning our organizational systems to the achievement of our Institutional Values.

A healthy organization
by promoting a strong sense of community with a commitment to communication, continuous learning and improvement.

Resources to succeed
by securing and sustaining human and financial resources and facilities to fulfill our mission.
STAFF
All college personnel must contribute to and support the educational mission of the college. We believe that:

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

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

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

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

• encourage students and staff to practice behaviors consistent with the preservation of a clean and safe environment
• minimize the creation of waste and repair, reuse, and recycle materials whenever possible
• provide facilities that are safe and free from environmental hazards
• use the most energy efficient systems available in the physical operation of the college and make energy conservation a priority when planning new facilities and retrofitting existing facilities
• purchase earth-friendly products whenever feasible and consider environmental effects when we plan investments in buildings, equipment, maintenance, and repairs
• maintain a landscape that provides opportunities for environmental awareness, learning, and enjoyment by using the most environmentally compatible methods available for upkeep
• evaluate our own performance through formal audits and by listening carefully to the observations of employees and others on ways we can improve.

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

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

Goals developed and adopted by the VISIONS Group, May 1993.
Instructional Values adopted by the VISIONS Group, May 1996.
Core Themes adopted in 2011.
2011-2012 Enrollment Statistics

<table>
<thead>
<tr>
<th>Enrollment Breakdown by Student Program 2011-2012</th>
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<tbody>
<tr>
<td>General Studies: 32%</td>
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<tr>
<td>College Transfer: 13%</td>
</tr>
<tr>
<td>Technical Degree or Certificate: 14%</td>
</tr>
<tr>
<td>Community Education: 36%</td>
</tr>
<tr>
<td>Developmental Education: 5%</td>
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</tbody>
</table>

<table>
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<tr>
<th>Revenue - General Fund</th>
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</thead>
<tbody>
<tr>
<td>State Appropriations: 26%</td>
</tr>
<tr>
<td>Tuition and Fees: 37%</td>
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<tr>
<td>Other Revenue: 3%</td>
</tr>
<tr>
<td>Property Taxes: 34%</td>
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</table>

<table>
<thead>
<tr>
<th>Expenditures - General Fund</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruction: 46%</td>
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<tr>
<td>Instructional Support &amp; Other: 7%</td>
</tr>
<tr>
<td>College Support: 22%</td>
</tr>
<tr>
<td>Student &amp; Community Services: 9%</td>
</tr>
<tr>
<td>Debt Payment: 9%</td>
</tr>
<tr>
<td>Plant Operations &amp; Maintenance: 7%</td>
</tr>
</tbody>
</table>

CCC at a Glance
Numbers reflect 2011-12 data unless otherwise noted.

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

District Population: estimated – County 383,857 (2012 Census)
District (83%) = 318,478 (2012 Census)

ENROLLMENT
2011-12 Head count: 35,191
2011-12 Full-time Equivalence: 8,521.24

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

College Transfer: CCC offers the two-year Associate of Arts Oregon Transfer degree, completion of which allows the student to meet the general education requirements of the baccalaureate degree program, and have junior standing for the purposes of admission and registration, at any Oregon University System (OUS) institution.

Literacy/Basic Skills: CCC offers individualized instruction in basic academic and study skills, including Adult High School Diploma, GED, ESL, Alternative Schools, and Life & Career Options.

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

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

CCC President
Dr. Joanne Truesdell

Board of Education
Ron Adams
Jean Bidstrup
Greg Chaimov
Judy Ervin
Chris Groener
Richard Oathes
Jane Reid
## Departments and Offices

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

<table>
<thead>
<tr>
<th>Bldg</th>
<th>Department/Office</th>
<th>Number</th>
<th>Bldg</th>
<th>Department/Office</th>
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<tbody>
<tr>
<td>D</td>
<td>ABE/GED</td>
<td>503-594-3395</td>
<td>G</td>
<td>Facility Scheduling</td>
<td>503-594-3308</td>
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<tr>
<td>RR</td>
<td>Admissions, Registration and Records</td>
<td>503-594-6100</td>
<td>RR</td>
<td>Financial Aid Office</td>
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</tr>
<tr>
<td>B</td>
<td>Advanced College Credit</td>
<td>503-594-3208</td>
<td>M</td>
<td>Foreign Language</td>
<td>503-594-3244</td>
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<td>CC</td>
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<td>H</td>
<td>Harmony</td>
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<td>Harmony Information</td>
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<tr>
<td>W</td>
<td>Wilsonville</td>
<td>503-594-0944</td>
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<td>Health Sciences</td>
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<td>T</td>
<td>Apprenticeship</td>
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<td>Horticulture</td>
<td>503-594-3292</td>
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<tr>
<td>AC</td>
<td>Art</td>
<td>503-594-3034</td>
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<td>Library</td>
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<td>R</td>
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<td>503-594-3043</td>
<td>CC</td>
<td>Life &amp; Career Options</td>
<td>503-594-3475</td>
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<td>B</td>
<td>Automotive</td>
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<td>M</td>
<td>Bookstore—Oregon City</td>
<td>503-594-3058</td>
<td>R</td>
<td>Physical Education</td>
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<td>H</td>
<td>Bookstore—Harmony</td>
<td>503-594-0647</td>
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<td>Math/Computer Lab</td>
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<td>S</td>
<td>Business/Computer Science</td>
<td>503-594-3071</td>
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<td>Music</td>
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<td>B</td>
<td>Business Office</td>
<td>503-594-3085</td>
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<td>Pauling Center Gallery</td>
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<td>Campus Learning Center</td>
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<td>M</td>
<td>Campus Safety Office</td>
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<td>The Clackamas Print Newspaper</td>
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<td>Computer Science</td>
<td>503-594-3164</td>
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<td>C</td>
<td>Criminal Justice/Corrections/Emergency Management</td>
<td>503-594-3040</td>
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<td>CC</td>
<td>Cooperative Work Experience</td>
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<td>503-594-3254</td>
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<td>Enrollment Services</td>
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<td>ELC</td>
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Visit Clackamas Community College on the web at www.clackamas.edu
Clackamas Community College
Oregon City Campus

CCC CAMPUSSITES

CCC at Harmony Community Campus
7738 S.E. Harmony Road
Milwaukie, OR 97222

CCC Oregon City
19600 Molalla Ave.
Oregon City, OR 97045

CCC Wilsonville Campus
29353 SW Town Center Loop E
Wilsonville, OR 97070

CCC OFF-CAMPUS SITES

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

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

Molalla Center
(behind Molalla Public Library)
201 East Fifth, Molalla, OR 97038

CODE BUILDING NAME (OC CAMPUS)

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

VICINITY MAP
Clackamas Community College
Harmony Community Campus

Clackamas Community College
Wilsonville Campus

Visit Clackamas Community College on the web at www.clackamas.edu
Getting Started
Start your Smart Story Today

www.clackamas.edu
Quick Guide to Getting Started

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

Admission

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

Clackamas Community College has an open door general admission policy and welcomes all students who can benefit from the instruction offered, regardless of their educational background. Adult enrollment (18 and older) is unrestricted. Students 17 and younger that have not completed high school or obtained a GED must comply with special enrollment requirements. See Programs for Adult Populations and High School Age Students, page 15, for additional information.

Students Seeking Degrees or Certificates

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

You should apply for admission at least four weeks prior to when you want to begin at CCC. If you are applying for financial aid or have previous college work to be evaluated, apply 10 weeks prior to when you want to begin at CCC.

Students Not Seeking Degrees or Certificates

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

Transfer Students

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

If you have taken classes at other colleges and would like this coursework reviewed for transfer credit at CCC, include official copies of your transcripts with your application or ask the college you previously attended to send a copy of your official transcript to the Registration and Records Office. NOTE: If you want this coursework evaluated before you begin at CCC, apply for admission and send your previous college transcripts to CCC at least 10 weeks prior to when you want to begin classes.

Transferring Credits

You may have already completed college credits through several local and national programs including Advanced College Credit (ACC), Advanced Placement (AP), College Level Examination Program (CLEP), International Baccalaureate (IB) and the military among others. It is important to send exam scores or transcripts to the Registration and Records Office at least 10 weeks prior to the term in which you will begin at CCC so your credits can be evaluated.

International Students/Program for Intensive English (PIE)

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

If you need a higher level of English proficiency to succeed in college credit courses, you will be placed in the Program for Intensive English and conditionally admitted to college level courses of study. Application materials and information are available at www.clackamas.edu; click on “Admissions & Aid”.

Visit Clackamas Community College on the web at www.clackamas.edu
Special Admission Programs

The following programs require a separate admission application:
• Degree Partnership Programs (four-year universities)
• International Students

Allied Health and Nursing:
• Clinical Lab Assistant
• Dental Assistant
• Medical Assistant
• Nursing

Special admission programs often require prerequisite courses or skills assessments. Requirements, application dates and deadlines are subject to annual change. Admission requirements and application materials for each program must be downloaded from www.clackamas.edu, Admissions & Aid.

Degree Partnership Programs

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

Programs for Adult Populations and High School Age Students

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

Basic Skills Development

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

Adult High School Diploma (AHSD)

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

You must be at least 16 years old. If you are under 18, you must provide a referral or a release from compulsory attendance from your local high school. AHSD degree requirements are listed on page 48.

General Education Development (GED)

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

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

Students Younger than Age 18

To take high school or college classes at CCC, the following options are available:
• If you are 16 years of age or older and want to get your high school diploma or GED at Clackamas, contact the Campus Learning Center, 503-594-3395.

• To take high school credit recovery classes at CCC that will transfer back to your high school, contact the Dye Learning Center, 503-594-3399.

• If you are under 18 and want to take college classes while still in high school contact Enrollment Services, 503-594-6100.

• If you want to earn transferrable college credits for courses you are taking at your high school, contact your high school counselor or the CCC Advanced College Credit coordinator, 503-594-3208.
Financial Aid & Scholarships

Application Procedures

You may apply for financial aid anytime throughout the year. However, because certain financial aid funds are limited, you should apply as soon after January 1 each year you want to receive aid.

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

After CCC receives the FAFSA data electronically, our financial aid staff will send you an email and post notifications in your myClackamas account (under My Documents). You must check your account frequently during this process to ensure you have submitted all of the forms needed to process your financial aid request. Failure to do so could mean you don’t have your aid when school begins.

Be sure to pay attention to the financial aid recommended deadlines and allow up to 12 weeks for the entire process from application to award letter.

IMPORTANT:

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

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

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

Student Eligibility Requirements

You may be eligible for financial aid if you:

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

For the Federal Direct and PLUS Loan programs, you must be enrolled at least half-time (six credit hours).

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

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

Program Eligibility Requirements

Eligible programs need to be at least one year in length (some exceptions apply) and must lead to a degree or certificate. Eligible one-year programs must provide training to prepare students for “recognized occupations” as defined in the Dictionary of Occupational Titles.

Academic Standards and Eligibility

To receive financial aid, you must fulfill the standards of Satisfactory Academic Progress (SAP). Information regarding SAP requirements are available online at www.clackamas.edu. Click on “Admissions & Aid”

Financial Aid Disbursement Policy

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

Federal & State Financial Aid Programs

FEDERAL PELL GRANTS

You may be eligible for up to $5,645 a year in 2013-14, depending on the amount of federal funding available. Awards are based on eligibility and enrollment status.
FEDERAL SUPPLEMENTAL EDUCATIONAL OPPORTUNITY GRANTS
You may be eligible for up to $1,050 a year. Part-time students (taking 6-11 credits a term) will receive smaller grants.

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

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

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

FEDERAL PARENT LOANS TO UNDERGRADUATE STUDENTS (PLUS)
Your parents may be eligible for Parent Loans to Undergraduate Students. Commercial banks and other participating lenders offer these loans. Parents may borrow the cost of education minus any financial aid.

CCC Financial Aid Programs
503-594-6100 or finaid@clackamas.edu

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

Scholarships
503-594-6100 or scholarships@clackamas.edu

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

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

In-district high school students who compete in the annual Clackamas Regional Skills contest are eligible for CCC scholarships. Partial, one-term tuition scholarships are awarded to the top three winners in all categories of the competition. For more information contact CCC Admissions and Recruitment, 503-594-3284.

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

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

PRIVATE SCHOLARSHIPS
A variety of sources offer private scholarships. These scholarships are listed at www.clackamas.edu/scholarships

Veterans Benefits
CCC OREGON CITY CAMPUS
BILL BROD COMMUNITY CENTER
503-594-3438
vetinfo@clackamas.edu
http://depts.clackamas.edu/veterans

If you have ever served in the Armed Forces you may be eligible for educational benefits. Benefits may also be available for spouses and dependent children of veterans. Please contact us to verify your benefit eligibility and make a career-focused education plan.

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

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

Testing/Assessment Center
CCC OREGON CITY CAMPUS, ROGER ROOK HALL, RR136
503-594-3283
CCC HARMONY COMMUNITY CAMPUS
503-594-0636
CCC WILSONVILLE CAMPUS
503-594-0944
Visit http://depts.clackamas.edu/testing or call for testing hours.

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

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

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

You may have already completed college credits through several local and national programs including Advanced College Credit (ACC), Advanced Placement (AP), College Level Examination Program (CLEP), International Baccalaureate (IB) and the military among others. It is important to send exam scores or transcripts to the Registration and Records Office at least 10 weeks prior to the term in which you will begin at CCC so your credits can be evaluated.

ACT OR SAT SCORES
If you have taken the ACT or SAT and your scores are high enough, you may be placed with these scores. Bring a copy of your scores to the testing center for evaluation. If your scores are not high enough, you will be asked to take one or more COMPASS tests.

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

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

Advising Sessions/Talking with an Advisor

Student Services
CCC OREGON CITY CAMPUS
BILL BROD COMMUNITY CENTER
503-594-3475
CCC HARMONY COMMUNITY CAMPUS
503-594-0623
CCC WILSONVILLE CAMPUS
503-594-0944
http://www.clackamas.edu/Advising

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

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

Faculty advisors in the academic departments are also available by appointment to provide specific information about your program of study. They can also serve as a mentor. Your faculty advisor’s name, e-mail address, phone number and office number are listed in the Schedule of Classes each term.

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

ENROLLMENT SERVICES CENTERS
ALL CAMPUS LOCATIONS
503-594-6100
registrar@clackamas.edu

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

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

To Change Your Schedule
Adding and Dropping Classes,
Changing Grading Method

You are required to obtain instructor permission (signature) after open enrollment ends. Generally this is after the first week of the term or after the course begins.

- You must officially drop courses you have registered for if you decide to stop going to class. Ceasing to attend class does not constitute official withdrawal! You will be held academically and financially responsible if you do not officially drop your courses. Official withdrawal is via myClackamas or in person.
- To change your grading method (from graded to P/NP, or P/NP to graded), you must submit a request to Enrollment Services by the end of the sixth week of the term.

To Audit a Class

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

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

Administrative Withdraw

- If you don’t attend your class during the first two weeks of the class, instructors MAY drop you but ARE NOT REQUIRED to do so. This is called administrative withdrawal.
- If an instructor does an administrative withdrawal, you may be granted a full refund of charges for the class.
- An instructor may administratively withdraw you from a course if you are unable to demonstrate fulfillment of the stated class prerequisite or co-requisite requirement.
- If you are utilizing Financial Aid or Veteran’s benefits, you may owe a repayment. Please check with these offices for additional information regarding your enrollment status and entitlement to benefits.
- If you are administratively withdrawn from a course, you will be notified by Enrollment Services.

Wait List Procedure

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

- Add your name to the wait list via myClackamas or in person.
- You will be added to the course by Enrollment Services on a first-come, first-served and eligibility basis. Note: This process ends once a course begins. You must contact your instructor directly once a course has started.
- You will be notified by email and sent a letter when you are added to a class.
- You are academically and financially responsible for the class if you no longer want to be in the class and don’t drop it.

The following conditions may affect your eligibility for wait list placement:

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

2013-2014 Tuition and Fees

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

<table>
<thead>
<tr>
<th>Tuition Type</th>
<th>Rate</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-state</td>
<td>$84 per credit</td>
<td>Applies to U.S. citizens or immigrants with a residency status (90 days at that address prior to the start of the term) in Oregon, Idaho, California, Nevada and Washington.</td>
</tr>
<tr>
<td>Out-of-state</td>
<td>$249 per credit</td>
<td>Applies to international students and students residing in states which do not border Oregon.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fee Type</th>
<th>Rate</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Student and Technology Fee</td>
<td>$6.50 per credit</td>
<td>Supports many CCC student activities including athletics, child care, instructional technology and student government.</td>
</tr>
<tr>
<td>College Services Fee</td>
<td>$20 per term</td>
<td>Non-refundable. Applies to credit courses and ABE, ASE, CIV, ESL, CED, and PIE courses. The College Services Fee covers the cost of various services including graduation, parking, a shuttle, testing and transcripts.</td>
</tr>
<tr>
<td>Deferred Payment Fee</td>
<td>$30 per term</td>
<td>Applied after the second week of the term if a balance is owed to the college.</td>
</tr>
<tr>
<td>Late Registration Fee</td>
<td>$50 per class</td>
<td>Applied to all courses in which registration occurs after the course has begun. This policy begins the third week of the term.</td>
</tr>
<tr>
<td>Non-Payment Fee</td>
<td>$75 per term</td>
<td>Applied after the sixth week of the term if a balance is owed to the college.</td>
</tr>
<tr>
<td>Non-Refundable Third Party Billing Fee</td>
<td>$15</td>
<td>Assessed on any student account where CCC is billing an outside business/organization for tuition and charges.</td>
</tr>
<tr>
<td>Returned Bank Item</td>
<td>$25 each item</td>
<td>Fee for checks returned for nonsufficient funds.</td>
</tr>
<tr>
<td>Course Fees</td>
<td>Varies</td>
<td>Certain classes have special fees in addition to tuition and the general fee. These are listed in the &quot;Course Fee&quot; column in the credit course listing in the Schedule of Classes.</td>
</tr>
</tbody>
</table>

Factors that Determine Your Tuition

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

OUT-OF-STATE TUITION
You are an out-of-state student for tuition purposes if you are a U.S. citizen, immigrant or permanent resident who has not established residency in Oregon, California, Idaho, Nevada or Washington 90 days prior to the first day of classes or you are an international student/visitor. You are an international student if you are a citizen of another country here on anything other than an immigrant visa. You will be required to have an I-20 to attend college.

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

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

SENIOR CITIZEN TUITION BENEFIT
If you are 62 years of age or older before the start date of the term, you are eligible for a senior citizen tuition benefit. Once your student record reflects this status, tuition will be charged at the rate of 1/2 of the resident rate for all CCC sponsored credit classes (fees excluded). Tuition and fee charges must be paid on or before the second Friday of the term to avoid late payment fees. Fees may not be deferred, however, tuition may be paid in installments. Contact Enrollment Services for procedures to follow. You are also entitled to free admission to many college special events and athletic activities. For community education senior citizen tuition benefit policies, see individual Community School listings in the Schedule of Classes.
SENIOR TUITION WAIVER AND AUDIT PROGRAM

If you are 65 years of age or older before the start date of the term, you may be eligible for the Senior Tuition Waiver program. This program is restricted to auditing courses with seats available after the term begins. Registration for these courses begins the third week of the term. Criteria for eligibility can be found on the Senior Tuition Waiver and Audit Form available online at www.clackamas.edu or from Enrollment Services.

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

Paying for Classes

How Do I Pay for Classes?

Pay Now: Payment is due at the time of registration. You can pay in person with cash or a local, bank-imprinted check, for the amount due. You can make credit card payments in person or online using Visa, MasterCard, Discover or American Express.

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

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

*Pay Later Conditions: You must be 18 years of age, owe a balance of at least $100, and cannot have an existing balance from a previous term or owe a financial aid repayment. If these conditions do not apply, payment is due at the time of registration.

Refund Policy

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

- During the first 2 weeks of the class for classes meeting 5 weeks or more
- During the first week of the class for classes meeting 3-4 weeks
- Before the class begins for classes meeting 2 weeks or less

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

If you have questions about an outstanding balance, contact the Student Accounts Receivables Office at 503-594-6100 or stuaccounts@clackamas.edu. If you have a question regarding a refund, contact Enrollment Services at 503-594-6100.

Cancelled Class

If your class is canceled you will be notified and officially dropped by Enrollment Services. Your tuition and fees for this class will be adjusted appropriately.
Visit Clackamas Community College on the web at www.clackamas.edu
The following academic information and regulations are intended to help you understand CCC policies and processes. If you have any questions, call our Call Center at 503-594-6100.

**Absence/Attendance**

- You must be officially registered to attend class.
- Be sure to notify your instructor if you can’t make it to your first day of class. If you don’t, you may lose your seat to a student on the wait list.
- If you stop going to class and you don’t officially drop the classes from your schedule, you will be held academically and financially responsible.
- If the college is open on a religious holiday, you may be excused through prior arrangement with your instructors.
- If you attend a college-sponsored field trip, intercollegiate function or other event, you may be excused through prior arrangement with your instructors.
- Financial aid programs have specific attendance requirements. Contact the Financial Aid Office at finaid@clackamas.edu or click on www.clackamas.edu for more information.

**Academic Standing**

All degree/certificate seeking students enrolling in six credits or more each term will be required to maintain a minimum term GPA of 2.0 and complete at least 50% of their attempted credits. (Credits attempted does not include credit hours dropped prior to the sixth week of the term or credit hours changed to audit.) Students will be evaluated for academic standing by the Registration and Records Office at the end of each term. Notification will be sent to students who have not met satisfactory academic standing as follows:

- The first term that a student does not meet academic standing requirements will result in an Academic Alert status. Students in this status will be provided with and encouraged to take advantage of academic support resources to assist them with areas of concern.
- If there is a second consecutive term that a student does not meet one or more of the academic standing requirements, he/she will be placed in an Academic Probation status. Students in this status will be required to meet with an academic advisor during the academic probation term in order to determine a course of action and the resources needed to support the student’s success. Students who do not meet with an academic advisor by the end of the 5th week of their probation term will be restricted from enrolling in a subsequent term.
- If there is a third consecutive term that a student does not meet one or more of the academic standing requirements, he/she will be placed in an Academic Suspension status. Students in this status will be required to petition to the Dean of Academic Foundations and Connections for reinstatement to CCC. If your petition is approved, you will be required to meet with an academic advisor and will be restricted from enrolling at CCC until intervention strategies have been accomplished. Student appeals will be considered quarterly by the Dean of Academic Foundations and Connections, for academic suspension status only.

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

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

- You will be asked to officially withdraw from classes through myClackamas, fax, mail, or in person.
- Students who have already shipped out or are unable to drop classes should contact Enrollment Services directly: 503-594-6100 or registrar@clackamas.edu
- You will be asked to submit a copy of your orders along with a request for a refund/credit to Enrollment Services.
- Requests to be held harmless financially and academically for a prior term enrollment must be submitted directly to the Registrar at 503-594-3370 or taras@clackamas.edu

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

**Credit by Examination**

*(Challenge Exam)*

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

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

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

**Credit Hours and Credit Loads**

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

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

**COURSES NUMBERED:**

| Credit Hours and Credit Loads | 100 and above | Courses that result in transcripted academic credit which may be applied toward a degree and/or certificate. May also transfer to four-year colleges.
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<tr>
<td>010 through 099</td>
<td>Courses that result in transcripted academic credit which may or may not be applied toward a degree and/or certificate. May be transferable to other community colleges. *</td>
<td></td>
</tr>
<tr>
<td>001 through 008</td>
<td>Continuing education courses, workshops or seminars that carry no credit or application toward a degree and/or certificate. Not transcripted.</td>
<td></td>
</tr>
<tr>
<td>009</td>
<td>Classes, seminars, workshops and training resulting in Continuing Education Units (CEUs). These courses are not transcripted as academic credit nor are they applicable toward a degree and/or certificate.</td>
<td></td>
</tr>
</tbody>
</table>

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

**Final Exams**

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

Letter grades are used to indicate the quality of work completed. To find your grade point average (GPA), divide the total number of grade points earned by the total number of credits attempted in classes graded A-F. Courses graded Pass/No Pass are excluded in calculating GPA. If you believe a grading error has occurred, you must notify your instructor immediately.

<table>
<thead>
<tr>
<th>GRADE</th>
<th>EXPLANATION</th>
<th>POINTS/CREDIT HOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>Good</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>Below Average</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>Fail</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete, no credit, no grade points</td>
<td>N/A</td>
</tr>
<tr>
<td>N</td>
<td>No pass, no credit, no grade points</td>
<td>N/A</td>
</tr>
<tr>
<td>P</td>
<td>Pass, credit given, no grade points</td>
<td>N/A</td>
</tr>
<tr>
<td>UG</td>
<td>Unreported grade, no credit, no grade points</td>
<td>N/A</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawn after sixth week of term, no credit, no grade points</td>
<td>N/A</td>
</tr>
<tr>
<td>X</td>
<td>Audit, no credit, no grade points</td>
<td>N/A</td>
</tr>
<tr>
<td>Y</td>
<td>Never attended, no credit, no grade points</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Incomplete**

A grade of Incomplete (I) indicates that the quality of work is satisfactory, but an essential requirement of the course has not been completed. Incompletes are granted only for acceptable reasons and only with the instructor’s consent. An Incomplete must be made up within one calendar year from the time it is received or it will convert to an “N” (No Pass) on your transcript, and then the course must be repeated if credit is to be received.

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

**Never Attended and Withdraw**

If you never attend a course and don’t drop it from your schedule, you remain financially responsible for the course and an instructor may assign a grade of “Y”.

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

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

**Pass/No Pass**

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

**Honor Recognition**

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

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

Registration and Transcript Restrictions

A transcript and/or registration restriction (referred to as a “hold”) will be placed on your record if you fail to meet an academic, equipment return or financial obligation to the college. You will be notified of the hold through your myClackamas account and the obligation must be resolved before the hold is removed.

See page 19 for additional policies related to registration.

Repeating Courses for Credit

Certain classes may be repeated for credit towards degree completion as specified in the catalog. If a catalog course description does not include information that specifies the course may be repeated then credits from the course may not be applied towards degree completion. If you have any questions about whether a repeated course will count for credit, contact the Advising Office.

Repeating Courses for GPA

You may repeat a course as many times as you choose. A repeated course will reflect an “R” on your transcript. Beginning summer term 2013 the best grade (A, B, C, D, F) will be used in computing your cumulative GPA. Other attempts will be shown on your transcript, but will not be included in calculating your GPA. This will happen automatically.

Repeated courses completed prior to summer term 2013 will reflect the most recent attempt in the GPA. A Repeated Course Notification form is required.

Variable Credit

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

Transcripts

Official transcripts of your coursework at CCC may be ordered online, in person, by written request or fax through Enrollment Services. Unofficial transcripts are available by going to the Web at http://my.clackamas.edu

For more information call the Transcript Request Line, 503-594-6102.

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

www.clackamas.edu
Academic Advising  
http://www.clackamas.edu/Advising/  

Student Services  
CCC OREGON CITY CAMPUS, COMMUNITY CENTER  
503-594-3475  
CCC HARMONY COMMUNITY CAMPUS,  
HARMONY BUILDING, H125 & H126  
503-594-0623  
CCC WILSONVILLE CAMPUS  
503-594-0944  

Academic advisors are available on a drop-in and appointment basis to help students by providing a wide range of academic information and assisting students with many academic processes including course selection, degree requirements, educational and career planning, and transfer information.

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

Associated Student Government  
www.clackamas.edu/Associated_Student_Government.aspx  
CCC OREGON CITY CAMPUS, COMMUNITY CENTER, CC152  
503-594-3040  

The Associated Student Government (ASG) of Clackamas Community College is the governing body of CCC students. The president and vice president are elected by the student body; senators and other officers are determined by a selection process. ASG operates under a constitution designed to promote student activities which stimulate social, physical, moral and intellectual life on campus.

Intramurals  
503-594-3931  
Clackamas offers opportunities for students to participate in a variety of intramural sports activities, including fun runs, softball, basketball, flag football, Badminton, dodge ball, ultimate Frisbee, and soccer, (not all activities are offered each year).

Athletics  
http://www.clackamas.edu/athletics/  
CCC OREGON CITY CAMPUS, RANDALL HALL  
503-594-3043  

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

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

Bookstore  
http://www.cccbooks.com/home.aspx  
CCC OREGON CITY CAMPUS, MCLAUGHLIN HALL  
503-594-6500  
CCC HARMONY COMMUNITY CAMPUS  
HARMONY BUILDING  
503-594-0647  

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

Textbooks are available for shipment or in store pick-up by ordering online at www.cccbooks.com
Students may sell their unwanted new and used books for cash at the Bookstore. Books may be worth up to 50% of the original price. Receipts are not needed for textbook buyback. While textbook buyback is open most of the year, students are encouraged to sell their books at term ending when prices are usually better.

Hours are posted in the Schedule of Classes, as well as on the website www.cccbooks.com.

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

**Career Information**

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

**Student Services**

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

CCC HARMONY COMMUNITY CAMPUS
503-594-0625

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

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

**Child Care**

http://www.clackamas.edu/childcare/

CCC OREGON CITY CAMPUS, FAMILY RESOURCE CENTER
503-657-9795

The YMCA Child Development Center is located in the Family Resource Center on the Oregon City campus of Clackamas Community College. The center offers affordable and flexible child care for children ages 6 weeks to 12 years. Children enrolled in the program will play and learn in our NAEYC accredited, state-licensed child care program which offers a host of age-appropriate experiences for children under the watchful guidance of well-trained, caring staff members.

Space is limited and pre-enrollment is necessary. We encourage you to contact the center for enrollment materials as soon as you recognize your child care needs.

Students at CCC may qualify for child care assistance and should contact the YMCA center to learn more about these options.

**Clubs**

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

CCC OREGON CITY CAMPUS, COMMUNITY CENTER
503-594-3933

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

**College Counselors**

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

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

CCC HARMONY COMMUNITY CAMPUS
503-594-0623, 503-594-0625

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

**Community Gardens**

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

CCC OREGON CITY CAMPUS
503-594-3040

The Community Gardens at Clackamas Community College provides an economical, convenient spot for the public to grow their own vegetables and flowers. Each plot is $40 per year.

For information on the Community Gardens, contact Student Life & Leadership at 503-594-3040. You can also e-mail: communitygarden@clackamas.edu
Computer Labs
CCC OREGON CITY CAMPUS
503-594-6632
CCC HARMONY COMMUNITY CAMPUS
503-594-0620

The college has computers available for student use, with lab assistance, in several major lab areas. Streeter Hall is the only general access labs open to all students.

Many academic departments manage their own computer labs. Specialized software for these programs is usually available in these labs only. Check with specific departments to see if they provide lab hours for their students.

Streeter Hall Academic Computing Lab
See The Learning Center.

Music Technology and Audio Recording Labs
NIEMEYER CENTER, N216
503-594-3337

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

Disability Resource Center
http://www.clackamas.edu/DisabilityResourceCenter/

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

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

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

Accessible parking (disabled parking) is available close to each campus building and disabled parking permits are obtained through the Oregon State Department of Motor Vehicles. Students needing temporary disabled parking (two weeks or less) may make arrangements through the Campus Safety Department. A letter from a physician supporting the need for temporary disability parking is required.

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

Clackamas Community College is specifically dedicated to providing a harassment-free environment for all people with disabilities, as well as a timely and effective provision of services for students with disabilities.

Any student with a disability who feels that they have been discriminated against or harassed due to their disability should contact the Disability Resource Center Coordinator.
Clackamas Community College offers English as a Second Language (ESL) for residents of the community, and the Program for Intensive English (PIE) for international students and international visitors. Both credit and noncredit classes are offered.

Enrollment Services Center
http://www.clackamas.edu/EnrollmentServices/
CCC OREGON CITY CAMPUS, ROGER ROOK HALL
503-594-6100
CCC HARMONY COMMUNITY CAMPUS
HARMONY BUILDING
503-594-0620
CCC WILSONVILLE CAMPUS
503-594-0940
The Enrollment Services Center provides information and assistance with admissions, registration, transcript requests, student ID cards, making payments and general financial aid.

Financial Aid
http://www.clackamas.edu/FinancialAid/
CCC OREGON CITY CAMPUS, ROGER ROOK HALL
503-594-6100
Financial Aid services provide students with information, applications and required forms for federal and state student aid programs, all types of scholarship programs, and the various types of aid and assistance offered by Clackamas Community College. General financial aid and scholarship advising sessions on a weekly basis. Also see pages 16-17.

Scholarships
http://www.clackamas.edu/Scholarships/
503-594-3421
The Scholarship Coordinator provides students with information regarding scholarships and provides assistance throughout the application process. The application for CCC Foundation Scholarships can be found beginning January 1st each year at www.clackamas.edu/scholarships with a deadline of April 30th. Scholarship questions can be emailed to scholarships@clackamas.edu

Veterans Benefits
http://depts.clackamas.edu/veterans
CCC OREGON CITY CAMPUS, DEJARDIN HALL, 1ST FLOOR
503-594-3438 or vetinfo@clackamas.edu
The college provides a wide range of services for Veterans which include:
- Information about benefits
- Education and career information
- Assistance with getting started and being successful
- Referrals to additional resources
- Assistance with necessary paperwork
- VA enrollment and progress certification
If you have ever served in the Armed Forces please contact us to learn more about our veteran services. Please see page 17 for more information.

Work Study
http://www.clackamas.edu/WorkStudy/
503-594-3428
The Work Study program is a federal financial aid program providing temporary employment. The program is based on financial need and available to eligible students who apply early and are enrolled in at least six credits of course work in a degree or certificate program. Applicants should use the Free Application for Federal Student Aid (FAFSA) to apply for financial aid.

Fitness Center
CCC OREGON CITY CAMPUS, RANDALL HALL
503-594-3043
The CCC Fitness Center is open to students and staff when classes are not scheduled in the center. Equipment includes pyramid weight machines, free weights, exercise bicycles, steppers and rowing machines, treadmills, as well as spinning bikes, ellipticals, an upper body ergometer and several single station machines.
Food Service
http://www.clackamas.edu/FoodService/

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

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

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

Haggart Astronomical Observatory
http://depts.clackamas.edu/haggart

CCC OREGON CITY CAMPUS
503-594-6044

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

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

Honor Society
http://depts.clackamas.edu/clubs/ptk/

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

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

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

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

Library

See The Learning Center.

The Learning Center
http://www.clackamas.edu/Tutoring

CCC OREGON CITY CAMPUS, DYE LEARNING CENTER
503-594-6191 or tutoring@clackamas.edu

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

Math Lab

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

Writing Center
503-594-6275 or writing@clackamas.edu

The Writing Center offers students one-to-one feedback on any writing assignment, for any class or project. Online tutoring may be available by request. Students can get help with any aspect of writing: understanding the assignment, strategies for getting started, grammar and editing, organization, strategies for revising and polishing, considering the audience, and citing sources. Help is available for working on scholarship and admissions applications and essays, as well as cover letters and resumes.
**Subject-Area Tutoring**

503-594-6275 or tutoring@clackamas.edu

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

**Library**

http://www.clackamas.edu/Library

503-594-6042

The library has a collection of over 32,000 books and compact disks and offers electronic access to the complete text of more than 4,600 journals, 1,200 newspapers, and over 50,000 e-books. With a student ID number, all databases may be accessed from home through the library’s Web page. Librarians assist students in the use of library and Internet resources and provide formal library instruction in LIB-101. Electronic reference assistance, interlibrary loan, and reserve materials are also available. The library is available for use by students, faculty, staff, and the general public.

**Academic Computing Lab**

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

The Academic Computing Lab in the Dye Learning Center has Windows-based computers available for student use and offers drop-in tutoring for a variety of computing issues, such as accessing information on Moodle, using all Microsoft Office applications, or printing using the campus “GoPrint” system. Business and computer science tutors are available during all open lab hours. The Academic Computing Lab is open Monday-Thursday from 7:30 a.m. to 8 p.m., Friday 7:30 a.m. – 5 p.m., and Saturday 11 a.m. to 3 p.m.

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

**Streeter Hall Computing Lab**

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

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

Additional services are offered in these locations:

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

**Music**

**CCC OREGON CITY CAMPUS, NIEMEYER CENTER**

503-594-3337

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

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

The Music Department offers group instruction on guitar, voice, and piano. In addition, individual (private) lessons are available for almost all instruments.

Music Technology Labs and Audio Recording Studios enable students to compose, record, print and produce music. Software includes Finale, ProTools, and Reason. The Labs are available to CCC students enrolled in appropriate music classes.

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

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

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

Renewable Energy
and Sustainability Center
http://depts.clackamas.edu/sustainability
503-594-3657

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

Service Learning Volunteers

CCC OREGON CITY CAMPUS, COMMUNITY CENTER
503-594-3041

The Service Learning program provides volunteer/community service opportunities for CCC students. Service Learning is a program which combines classroom learning with volunteer field experience. College credit is earned for participation in the program and tuition is free.

Speech & Debate: Forensics

http://depts.clackamas.edu/comm-theatre/SpeechHome.htm
CCC OREGON CITY CAMPUS, NIEMEYER CENTER
503-594-3155

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

Student Accounts Receivable

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

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

Student ID Cards

Photo student ID cards are available at each of our campuses. You’ll need this card for transactions on campus, including library checkout, access to computer and tutorial labs, the Assessment Center, enrollment verification, and admission to college events. Picture identification will be required to obtain your photo ID card.
Student Life & Leadership
http://www.clackamas.edu/StudentLife

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

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

Student Publications
http://thecrackamasprint.com/
http://depts.clackamas.edu/comm-theatre/
   JournalismStudentPublications_000.htm

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

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

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

For more information contact Rita Shaw at ritas@clackamas.edu or 503-594-3254.

Testing/Assessment
http://depts.clackamas.edu/testing

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

The Testing/Assessment Center offers a variety of testing and assessment services including:
- Placement assessment
- GED (General Educational Development)
- Distance Learning proctored testing
- Make-up exams (by instructor arrangement)
- Computer Science Placement
- Computer Competency Exam
- Oregon Department of Agriculture Exams
- State of Oregon Tax Board Exams

CCC HARMONY COMMUNITY CAMPUS
HARMONY BUILDING
503-594-0636
- Placement assessment
- Make-up exams (by instructor arrangement)
- Computer Science Placement
- Computer Competency Exam
- Distance Learning proctored testing

CCC WILSONVILLE CAMPUS
503-594-0944
- Placement assessment
- Distance Learning proctored testing
- Make-up exams (by instructor arrangement)
- Computer Competency Exam
- State of Oregon Tax Board Exams
- Computer Science Placement
The Theatre Department produces one full-length play and several student-directed theatre projects each term. Workshop courses focus on the production of theatre for public performance, and everyone in the community is welcome to participate. The department also offers lecture courses which encompass technique, theory, and philosophy of theatre arts. College credit is available for each production, and students in need of financial assistance may qualify for tuition waivers or work-study.

Clackamas Repertory Theatre
www.clackamasrep.org

Theatre
www.theatreccc.org
CCC OREGON CITY CAMPUS, NIEMEYER CENTER
503-594-3153

Clackamas Repertory Theatre is a professional theatre company which produces a three-play season July through October. CRT features current and former CCC Theatre Department students both on stage and behind the scenes, as well as professional Portland area actors and directors. For information on our current season see our website at www.clackamasrep.org

Streeter Hall Academic Computing Lab
See The Learning Center.

Streeter Hall Math Lab
See The Learning Center.

Streeter Hall Tutoring Lab
See The Learning Center.

VET Center
http://www.clackamas.edu/Veterans/

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

Workforce Services
http://www.clackamas.edu/WorkforceServices/

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

Be Future Ready!

WorkSource Clackamas is preparing Oregonians for jobs in healthcare, green technologies, logistics and more. WorkSource Clackamas has no-cost career advancement services that can help you:

- update your skills
- sharpen your job search expertise with our no-cost workshops
- access jobs in high-growth careers

Consult our experts! Our Career Advisors are experts in Job Search strategies for the 21st Century. Take the next step, call 503-594-6246, or visit www.worksourceclackamas.org.

Writing Center
See The Learning Center.
Student Rights

Campus Security Report – Jeanne Clery Act
The “Jeanne Clery Disclosure for Campus Security Policy and Campus Crime Statistics Act” (formerly the Campus Security Act) is a federal law that requires institutions of higher education to disclose campus security information, including crime statistics for the campus and surrounding area. As a current or prospective CCC student or employee, you have a right to obtain a copy of this information. You may review this information by accessing the federal government web site (enter “Clackamas Community College” in the search field) or in the CCC student handbook. You may also obtain a hard copy of this information upon request by contacting the CCC Campus Safety at 503-594-6234 or at http://www.clackamas.edu/Rights_and_Responsibilities.aspx

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

1. Enrollment status
2. Verification of certificate or degree award
3. Residency status
4. Major
5. Athletic participation – height and weight of team members

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

a. Student name, address, telephone number
b. Class location to Public Safety in case of health or safety emergencies.

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

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

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

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

- The right to inspect and review your records. You may request to review your records by submitting a written request to the Registration and Records Office or other school official having custody of such records.
- The right to seek amendment to your record if you believe it to be inaccurate, misleading or in violation of your privacy rights. Requests for amendments must be in writing and must describe the specific item or record you wish to have amended. You must also include the reasons why the amendment is justified.
- The right to consent to disclosure of personally identifiable information contained in your academic records, except when consent is not required by FERPA. FERPA does not require a student’s consent when disclosure is to school officials with legitimate educational interests (See AR 6-96-0031). Additionally, consent is not required by FERPA in the instances where a person or company with whom the college has contracted or appointed as its agent and/or students serving on official committees have legitimate educational interest. A school official has a legitimate educational interest if the official needs to review an academic record in order to fulfill his/her professional responsibilities.
- The right to file a complaint with the Department of Education, Family Compliance Office concerning alleged failures by the college to comply with the FERPA requirements.

FERPA allows the college to disclose your directory information without consent. If you do not want this information released, you must submit a request with the Registration and Records Office.

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

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

Use of Your Social Security Number

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

OCCURS or the college may provide your Social Security Number to the following agencies or match it with records from the following systems:

• State and private universities, colleges and vocational schools, to find out how many community college students go on with their education and to find out whether community college courses are a good basis for further education.

• The Shared Information System, which gathers information to help state and local agencies plan education and training services to help Oregon citizens get the best jobs available.

• The Oregon Employment Department, which gathers information, including employment and earnings, to help state and local agencies plan education and training services to help Oregon citizens get the best jobs available.

• The Oregon Department of Education, to provide reports to local, state, and federal governments. The information is used to learn about education, training, and job market trends for planning, research and program improvement.

• The Oregon Department of Revenue and collection agencies only for purposes of processing debts and only if credit is extended to you by the college.

• The National Student Loan Clearinghouse for the purpose of verifying your enrollment at other colleges, universities and vocational schools.

• The Internal Revenue Service, to provide required information related to the Taxpayer Relief Act of 1997. State and federal law protects the privacy of your records. Your number will be used only for the purposes listed above.

Solomon Amendment Disclosure

The Solomon Amendment requires by law that the college release: student name, address, telephone number, date of birth, educational level, academic major and degrees awarded upon request from recruiters of the branches of the U.S. military. If you request that this information not be released, CCC will not release to military recruiters or other parties except as noted in this publication or upon written permission from you.

Student Information

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

• Confidential financial information reported by the parent or guardian unless the records explicitly grant by written permission the student to review the financial statement.

• Medical, psychiatric, or similar records used for treatment purposes.

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

*All data from records submitted, filed and accumulated in Enrollment Services become the property of the College.
**Student Right to Know and Other Notification Requirements**

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

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

**Discrimination Concerns**

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

In accordance with applicable law, Clackamas Community College does not discriminate on the basis of a disability and is specifically dedicated to providing a harassment free environment for all people with disabilities, as well as timely and effective provision of services for students with disabilities. To this end the following procedures are designed to serve any member of the community who experiences any form of discrimination.

**ADA Grievance Procedure**

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

Any disabled student is free at any time to submit a complaint to the office for Civil Rights. Please refer to board policy for ADA Grievance Procedure and Discrimination form:

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

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

**Sexual Harassment/Assault Report Procedure**

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

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

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

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

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

Name: ___________________________________ CCC Email: ___________________________________
Student ID: __________________________ Telephone: ________________________ Date: ___________

Mailing Address __________________________________ City __________________________ State ________ Zip ________

Date the Problem Occurred: ____________ Location of incident: ________________________

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

• Have you spoken with the staff member involved (circle one): yes no
  If yes, please provide name(s) and describe the discussion, including outcome.

• Please describe the issue, giving rise to your problem/concern, in as much detail as possible. Include any places, dates and/or times you can recall. Also reference campus policy and/or procedures as they may apply.

• Please describe—as clearly as you can—what would resolve this issue for you.

Student Signature _______________________________________________________________________

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

Problem Resolution Form Instructions

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

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

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

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

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

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

Tips for successful communication when using this form

Ask yourself these questions:

• Stick to the facts: What are the objective facts that describe the situation?

• Is there a policy in the student handbook or class syllabus that relates to the problem?

• Can you request a meeting that is in a safe location and provides time for all parties to prepare?

• Do you have any documentation to support the claims made about the problem?

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

• Separate the problem from the person.

• Focus on shared interests

• Generate as many solutions as possible.

• Identify solutions that both parties would agree are viable options for resolution.
Graduation Requirements

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

General Requirements (apply to all degrees, certificates and diplomas)

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

- You must complete 25% of your degree and/or certificate requirements at CCC
- You must petition for graduation within one calendar year from the date you completed requirements for the degree and/or certificate
- The prior catalog cannot be more than five years old (e.g. in 2013-14, the oldest catalog that can be used is 2008-09)
- For the catalog selected, you must have earned at least one credit in that calendar year.

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

Multiple Degrees/Certificates of Completion

A student wishing to earn multiple associate degrees must complete 24 credit hours of college level 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 form must be filed for each individual associate degree and/or certificate of completion that you are attempting to earn. Multiple degrees/certificates may be earned as follows:

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

To Successfully Graduate

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

- Have coursework from other colleges evaluated early. Send all transcripts to Enrollment Services as soon as possible
- Talk with an Academic Advisor early and often
- Complete all pre-requisites for required courses
- If you change your mind about what you are studying, notify Enrollment Services as soon as possible
- If you plan to transfer to a four-year university or college, contact that institution to inquire about articulation agreements in your field of study
- Be sure to submit a Petition for Graduation form two terms before you think you will be finished with classes so CCC can confirm you have met all of your degree or certificate graduation requirements

Graduation Ceremony

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

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

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

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

AAOT/ASOT Student Learning Outcomes

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

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

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

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

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

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

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

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

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

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

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

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

ASOT students will also be able to:

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

**Associate of General Studies (AGS)**

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

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

**Oregon Transfer Module (OTM)**

The OTM represents approximately half of an associate's degree (45 credits). The OTM is designed for students who wish to transfer to an Oregon University System (OUS) school or another Oregon community college. Completion of the OTM can help those students taking courses at multiple post-secondary institutions by ensuring transferability of coursework. This is not a degree or certificate but is documentation on a student's transcript that they have met a subset of common general education requirements. Please refer to page 55 for Student Guide information. Students interested in the OTM should meet with an academic advisor in Student Services, see page 18.

**Associate of Applied Science (AAS)**

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

**Certificates of Completion (CC)**

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

**Career Pathway Certificates**

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

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

**General AAS and CC Requirements**

General requirements for obtaining an AAS or CC include:

- Complete a minimum of 90 credits for an AAS degree
- Establish a cumulative 2.0 GPA at CCC
- Establish residency by earning a minimum of 25% of the degree or certificate credits at CCC
- See page 44 for additional general requirements for all degrees and certificates
- Specific discipline requirements are listed on pages 61-120.
Work-based programs, such as cooperative work experience, clinicals, practicums, or internships, are an important feature of all CCC Career Technical programs. These special arrangements between CCC and local employers provide students with the opportunity to get related work experience in the field of their program of study while earning credit towards a degree or certificate.

**Cooperative Work Experience (CWE)**

The Cooperative Work Experience (CWE) is an internship program which offers students the opportunity to earn college credit by working in a job directly related to their program of study. CWE offers expanded learning experiences through exposure to actual work situations, organizational relationships, equipment, and techniques that cannot be duplicated in the classroom. CCC’s CWE program creates a vital bridge between college studies and workplace success.

**Requirements & Registration for CWE:**

- Contact an advisor and a CWE instructor in your area of study. CWE instructor consent is required for registration.
- Complete the CWE application and determine the number of work hours and appropriate credits.
- Register for 1) the appropriate CWE course for program of study and 2) the classroom or online CWE seminar.
- Set and accomplish (with the help of a CWE instructor and work site supervisor) measurable learning objectives.
- Participate in a CWE seminar course on career management skills and complete seminar assignments.
- Successfully complete 30 hours of work experience for every credit.

**Credit & Grading**

The number of credits earned depends on the number of hours worked and the program requirements. Students may earn a maximum of 12 CWE credits per year.

<table>
<thead>
<tr>
<th># of Credits</th>
<th>Hours Worked Per Week</th>
<th>Total Hours Per Term</th>
<th>Seminar Hours Per Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 credits</td>
<td>18-20 hours</td>
<td>180-216 hours</td>
<td>16 hours</td>
</tr>
<tr>
<td>5 credits</td>
<td>15-17 hours</td>
<td>150-179 hours</td>
<td>16 hours</td>
</tr>
<tr>
<td>4 credits</td>
<td>12-14 hours</td>
<td>120-149 hours</td>
<td>16 hours</td>
</tr>
<tr>
<td>3 credits</td>
<td>9-11 hours</td>
<td>90-119 hours</td>
<td>16 hours</td>
</tr>
<tr>
<td>2 credits</td>
<td>6-8 hours</td>
<td>60-89 hours</td>
<td>16 hours</td>
</tr>
<tr>
<td>1 credit</td>
<td>3-5 hours</td>
<td>30-59 hours</td>
<td>16 hours</td>
</tr>
</tbody>
</table>

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

Professional upgrade coursework may be applied towards certificates and degrees, and/or may result in business and industry certification. Students are strongly encouraged to consult with the appropriate department to determine how professional upgrade courses may be applied toward their education plans both at CCC and other institutions. Certificates are awarded to students who complete the specific requirements within a career and technical major. Refer to the Career Technical Program pages of this catalog for more information.
Diplomas

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

Students must be at least 16 years old. Those under 18 are admitted with a referral or a release from compulsory attendance from their local high school. See www.clackamas.edu, under Programs & Certificates, for information.

REQUIREMENTS FOR ADULT HIGH SCHOOL DIPLOMA

Complete a minimum of 24 high school units:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language Arts</td>
<td>4</td>
</tr>
<tr>
<td>(Shall include the equivalent of one unit in written composition.)</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>Science</td>
<td>3</td>
</tr>
<tr>
<td>US History</td>
<td>1</td>
</tr>
<tr>
<td>Global Studies</td>
<td>1</td>
</tr>
<tr>
<td>Government &amp; Civics</td>
<td>1</td>
</tr>
<tr>
<td>Health Education</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education</td>
<td>1</td>
</tr>
<tr>
<td>Career &amp; Technical Education, The Arts, and/or Second Language (Any one area or in combination.)</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

Total: 24

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

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

In addition to the credit and competency requirements, students must maintain a 2.0 GPA at the college and successfully complete at least 12 college credits or two high school units through CCC.

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

Registration for GED preparation classes takes place in the Dye Learning Center.
**Student Guide 2013-2014**

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

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

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Writing</strong> - 8 credits, including one course of Information Literacy. WR-121 and 122 meet this requirement.</td>
<td>WR-121 and either 122, or 227</td>
</tr>
<tr>
<td><strong>Oral Communication</strong> - 1 course</td>
<td>COMM-111, 112</td>
</tr>
<tr>
<td><strong>Mathematics</strong> - 1 course</td>
<td>MTH-105, 111, 112, 211, 212, 213, 243, 244, 245, 251, 252, 253, 254, 256, 261</td>
</tr>
<tr>
<td><strong>Health &amp; Physical Education</strong> 1 or more courses totaling at least 3 credits.</td>
<td>PE-131, 185, 194, 207, 240, 260, 270, 294&lt;br&gt;HE-151, 152, 204, 205, 249, 250, 252, 255&lt;br&gt;HPE-295</td>
</tr>
</tbody>
</table>

**GENERAL EDUCATION DISTRIBUTION AREA**

**Arts & Letters** - 3 courses from 2 or more disciplines. Each course must be at least 3 credits. Choose from the following:

- ASL-*201, *202, *203
- BA-130
- FR-*201, *202, *203
- HUM-*160, *170, *235
- J-211
- MUS-105, 111, 112, 113, 205, 206, 211, 212, 213
- SPN-*201, *202, *203
- TA-101, 102, 103, 141, 142, 143<br>WR-270

**Social Science** - 4 courses from 2 or more disciplines. Each course must be at least 3 credits. Choose from the following list:

- EC-115, 200, 201, 202
- PS-*200, 201, 202, 203, 205, 206, 225
- SSC-*160, *170, *235
- WS-101*

**Science/Math/Computer Science** - 4 courses from at least 2 disciplines including at least 3 laboratory courses in biological and/or physical science. Choose from the following courses:

- ASC-200, 201, 202
- CH-104, 105, 106, 112, 221, 222, 223
- ESR-171, 172, 173
- G-101, 102, 103, 145, 148, 201, 202, 203
- GS-104, 105, 106, 107
- MTH-105, 111, 112, 113, 211, 212, 213, 243, 244, 251, 252, 253, 254, 256, 261
- PH-104, 121, 122, 123, 201, 202, 203, 211, 212, 213<br>Z-201, 202, 203

**Cultural Literacy** - 1 course

Courses meeting the Cultural Literacy requirement are noted with an asterisk.

**Elective Courses**

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

Other courses numbered 100 or above may be used in this area, which may include up to 12 credits of career technical courses. Please refer to the Career Technical Programs, pages 61-120, for a listing of courses that may be included in the 12 credits mentioned above.

* Course meets Cultural Literacy requirement.

Note: Placement in RD-115 and/or WR-121 is recommended for courses on this page and in some cases, placement in MTH-105 or MTH-111 may also be recommended. See course descriptions, pages 121-214.

Note: No course may be used to satisfy more than one requirement or distribution area.
**Student Planner Worksheet 2013-2014**

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

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

### Requirements

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

**Note:** Refer to page 53 for list of approved courses.

(Total minimum of 90 credits required.)

---

### Additional Graduation Requirements

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

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

*Courses used in these areas must be at least 3 credits. See list on page 49 for approved courses.

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

---

Visit Clackamas Community College on the web at [www.clackamas.edu](http://www.clackamas.edu)
### Degree and Certificate Information and Requirements

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

Note: For the most current list of General Education courses, go to: [http://www.clackamas.edu/curriculum](http://www.clackamas.edu/curriculum)

#### Requirements

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR-121 and either 122 or 227</td>
<td><strong>Writing - 8 credits</strong></td>
</tr>
<tr>
<td>COMM-111 or COMM-112</td>
<td><strong>Oral Communication - 3 credits</strong></td>
</tr>
<tr>
<td>MTH-111 or higher, 4 credits of statistics (MTH-243 or MTH-244) are required</td>
<td><strong>Mathematics - 12 credits</strong></td>
</tr>
<tr>
<td>BA-131</td>
<td><strong>Computer Applications</strong></td>
</tr>
</tbody>
</table>

#### General Education Distribution Area

**Arts & Letters**

Courses used in this area must be at least 3 credits.

- Choose from the following courses to meet degree requirements.
- All courses must be passed with a C or better.
- Placement in RD-115 and/or WR-121 is recommended for courses on this page and in some cases, placement in MTH-105 or MTH-111 may also be recommended. See course descriptions, pages 121-214.
- Note: No course may be used to satisfy more than one requirement or distribution area.

<table>
<thead>
<tr>
<th>Course</th>
<th>Note: Must equal a minimum of 12 credits from at least 2 disciplines</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR-121 and either 122 or 227</td>
<td></td>
</tr>
<tr>
<td>COMM-111 or COMM-112</td>
<td></td>
</tr>
</tbody>
</table>

#### General Education Distribution Area

**Social Science**

Courses used in this area must be at least 3 credits.

- Choose from the following courses.
- Placement in RD-115 and/or WR-121 is recommended for courses on this page and in some cases, placement in MTH-105 or MTH-111 may also be recommended. See course descriptions, pages 121-214.
- Note: No course may be used to satisfy more than one requirement or distribution area.

<table>
<thead>
<tr>
<th>Course</th>
<th>Note: Must equal a minimum of 12 credits from at least 2 disciplines</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-201 and EC-202 and courses from the following list:</td>
<td></td>
</tr>
<tr>
<td>EC-115, 200, 201, 202</td>
<td></td>
</tr>
<tr>
<td>PS-200, 201, 202, 203, 205, 206, 225</td>
<td></td>
</tr>
<tr>
<td>SSE-160, *170, *235</td>
<td></td>
</tr>
<tr>
<td>WS-101*</td>
<td></td>
</tr>
</tbody>
</table>

#### General Education Distribution Area

**Science**

Courses used in this area must be at least 3 credits.

- Choose from the following courses.
- Placement in RD-115 and/or WR-121 is recommended for courses on this page and in some cases, placement in MTH-105 or MTH-111 may also be recommended. See course descriptions, pages 121-214.
- Note: No course may be used to satisfy more than one requirement or distribution area.

<table>
<thead>
<tr>
<th>Course</th>
<th>Note: Must equal a minimum of 12 credits from at least 2 disciplines</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASC-200, 201, 202</td>
<td></td>
</tr>
<tr>
<td>CH-104, 105, 106, 112, 221, 222, 223</td>
<td></td>
</tr>
<tr>
<td>ESR-171, 172, 173</td>
<td></td>
</tr>
<tr>
<td>G-101, 102, 103, 145, 148, 201, 202, 203</td>
<td></td>
</tr>
<tr>
<td>GS-104, 105, 106, 107</td>
<td></td>
</tr>
<tr>
<td>PH-104, 121, 122, 123, 201, 202, 203, 211, 212, 213</td>
<td></td>
</tr>
<tr>
<td>Z-201, 202, 203</td>
<td></td>
</tr>
</tbody>
</table>

#### Business Specific

- Choose from the following courses.
- Placement in RD-115 and/or WR-121 is recommended for courses on this page and in some cases, placement in MTH-105 or MTH-111 may also be recommended. See course descriptions, pages 121-214.
- Note: No course may be used to satisfy more than one requirement or distribution area.

<table>
<thead>
<tr>
<th>Course</th>
<th>Note: Must equal a minimum of 12 credits from at least 2 disciplines</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-101, 211, 212, 213 and 226</td>
<td></td>
</tr>
</tbody>
</table>

### Note

- Placement in RD-115 and/or WR-121 is recommended for courses on this page and in some cases, placement in MTH-105 or MTH-111 may also be recommended. See course descriptions, pages 121-214.
- Note: No course may be used to satisfy more than one requirement or distribution area.
Student Planner Worksheet 2013-2014

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

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

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

(Total minimum of 90 credits required.)

Additional Graduation Requirements

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

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

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

* Courses used in these areas must be at least 3 credits. See list on page 51 for approved courses.

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

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

Associate of General Studies • Associate of Applied Science Certificates

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

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

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

Certificate of Completion (CC)

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

- Communication
- Computation
- Human Relations

---

`Students are encouraged to work closely with an academic advisor if they are planning to transfer to a four-year institution upon completion of any of these programs.`

---

List of Approved Courses:

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

### Communication
- WR-101, 121, 122, 123, 222, 227

### Computation
- Computer Science: CS-133VB, 161, 162, 260
- Mathematics: MTH-050, 052, 054, 065 or above (except 199 and 299)

### Human Relations
- Anthropology: ANT-102, 103
- Business: BA-285
- Education: ED-258
- History: HST-101, 102, 103, 201, 202, 203
- Oral Communication: COMM-100, 105, 112, 126, 140, 218, 227
- Political Science: PS-203, 205
- Psychology: PSY-101, 110, 200, 205, 214, 215, 219, 221, 231, 240
- Sociology: SOC-204, 205, 206, 223, 225, 230

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

---

Prerequisites for Reading, Writing and Math Courses

This chart of reading, writing and math prerequisites is designed to help you map out the courses you will take to complete your studies, or to meet prerequisites for other courses you wish to take. Use your placement scores to find which course you “placed” in, register to take that course first.
**Student Planner Worksheet 2013-2014**  
**Associate of General Studies Degree (AGS)**

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

<table>
<thead>
<tr>
<th>Requirements</th>
<th>CCC Courses Completed</th>
<th>Transferred Courses</th>
<th>Credits Earned</th>
<th>Courses Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Relations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PE/Health</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total Related Instruction Credits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete additional college-level coursework for a total minimum of 90 credits combined with the above</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Competency*</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Other College-Level Courses**</td>
<td></td>
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</tr>
</tbody>
</table>

| TOTALS | |

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

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

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

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

See page 44 for additional information on general requirements for graduation.
# Degre and Certificate Information and Requirements

## Oregon Transfer Module (OTM)

**Student Guide 2013-2014**

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

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foundational Skills</strong></td>
<td><strong>Writing</strong> (2 courses)</td>
</tr>
<tr>
<td><strong>Oral Communication</strong></td>
<td><strong>Oral</strong> Communication (1 course)</td>
</tr>
<tr>
<td><strong>Mathematics</strong> (1 course)</td>
<td><strong>Mathematics</strong></td>
</tr>
<tr>
<td><strong>Social Science</strong> (3 courses)</td>
<td><strong>Social Science</strong></td>
</tr>
<tr>
<td><strong>Elective Courses</strong></td>
<td><strong>Elective Courses</strong></td>
</tr>
</tbody>
</table>

**Notes:**

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

---

Students are encouraged to work closely with an academic advisor if they are planning to transfer to a four-year institution upon completion of these programs. Call 503-594-3475 or email: advising@clackamas.edu for more information.
### Student Planner Worksheet 2013-2014

**Oregon Transfer Module (OTM)**

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

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Courses Required</th>
<th>CCC Courses Completed</th>
<th>Transferred Courses</th>
<th>Courses/Credits Earned</th>
<th>Courses Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Writing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WR-121, and either 122 or 227</td>
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<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oral Communications</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>COMM 111, 112</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mathematics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTH-105, 111, 112, 211, 212, 213, 243, 244, 251, 252, 253, 254, 256, 261</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Arts &amp; Letters</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Social Science</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Science/Math/Computer Science</strong></td>
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<tr>
<td>Select 3 courses including at least one lab course in the biological or physical sciences.</td>
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</tr>
<tr>
<td><strong>Elective Courses</strong></td>
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</tr>
<tr>
<td>Courses must be from the introduction to Disciplines areas (Arts &amp; Letters, Social Science, or Science/Math/Computer Science)</td>
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<td></td>
</tr>
<tr>
<td><strong>Note:</strong> Refer to page 53 for list of approved courses.</td>
<td></td>
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</tr>
<tr>
<td><strong>TOTALS</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(Total minimum of 45 credits required.)</td>
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</tr>
</tbody>
</table>

### Additional Requirements

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

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

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

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

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

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<tr>
<td>Web Design &amp; Development</td>
<td>117</td>
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<tr>
<td>Welding Technology</td>
<td>119</td>
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<tr>
<td>Western Association of Food Chains (WAFC) Retail Management</td>
<td>115</td>
</tr>
<tr>
<td>Wilderness Survival and Leadership</td>
<td>91</td>
</tr>
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</table>
Career Technical Programs

www.clackamas.edu
Accounting

Associate of Applied Science Degree

The Accounting program at Clackamas Community College emphasizes developing an advanced understanding of accounting principles, analytical skills and the capacity to solve problems. Students should have the ability to reason, read with comprehension and compute math applications.

The program is not designed to lead to a traditional four-year business administration degree, although it may articulate with accelerated and nontraditional programs such as those offered by private universities.

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

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

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

ACCOUNTING ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

<table>
<thead>
<tr>
<th>FALL TERM</th>
<th>CREDITS</th>
</tr>
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<tbody>
<tr>
<td>BA-101</td>
<td>Introduction to Business</td>
</tr>
<tr>
<td>BA-104*</td>
<td>Business Math</td>
</tr>
<tr>
<td>BA-211</td>
<td>Financial Accounting I</td>
</tr>
<tr>
<td>BA-226</td>
<td>Business Law I</td>
</tr>
<tr>
<td>WR-121</td>
<td>English Composition</td>
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<table>
<thead>
<tr>
<th>WINTER TERM</th>
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<tbody>
<tr>
<td>BA-131</td>
<td>Introduction to Business Computing</td>
</tr>
<tr>
<td>BA-156</td>
<td>Business Forecasting</td>
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<td>BA-177</td>
<td>Payroll Accounting</td>
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<tr>
<td>BA-212</td>
<td>Financial Accounting II</td>
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<tr>
<td>BA-251</td>
<td>Supervisory Management</td>
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<tbody>
<tr>
<td>BA-205</td>
<td>Solving Communication Problems with Technology</td>
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<td>BA-213</td>
<td>Decision Making with Accounting Information</td>
</tr>
<tr>
<td>BA-218</td>
<td>Personal Finance</td>
</tr>
<tr>
<td>BA-285</td>
<td>Human Relations in Business</td>
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ACCOUNTING ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

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<tbody>
<tr>
<td>BA-223</td>
<td>Principles of Marketing</td>
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<tr>
<td>BA-256</td>
<td>Income Tax Accounting</td>
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<tr>
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WINTER TERM

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<td>BA-206</td>
<td>Management Fundamentals</td>
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<td>BA-216</td>
<td>Cost Accounting</td>
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<td>BA-222</td>
<td>Financial Management</td>
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<td>BA-227</td>
<td>Business Law II</td>
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SPRING TERM

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<tbody>
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<td>BA-217</td>
<td>Budgeting for Managers</td>
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<tr>
<td>BA-225</td>
<td>Business Report Writing</td>
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<tr>
<td>or WR-227</td>
<td>Technical Report Writing</td>
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<tr>
<td>BA-228</td>
<td>Computerized Accounting</td>
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<tr>
<td>BA-255</td>
<td>Advanced Topics in Accounting &amp; Auditing</td>
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<tr>
<td>BA-280</td>
<td>Business/CWE</td>
</tr>
</tbody>
</table>

Credits required for degree: 92-93

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

Accounting Clerk

Certificate

Curriculum includes basic bookkeeping and accounting, including manual and computerized data entry, transaction analysis, preparation of financial statements and other related tasks. Graduates of this certificate program can specialize in tax preparation or general accounting assistant work.

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

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

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

ACCOUNTING CLERK CERTIFICATE

<table>
<thead>
<tr>
<th>FIRST TERM</th>
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<td>Business Math</td>
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<tr>
<td>or BA-111</td>
<td>General Accounting I</td>
</tr>
<tr>
<td>WR-121</td>
<td>English Composition</td>
</tr>
</tbody>
</table>
### Administrative Office Professional

**Associate of Applied Science Degree**

This program provides a strong foundation of office and technology skills and courses in business administration, with an emphasis on critical thinking and human relations skills. The program includes Related Instruction requirements, industry standard computer programs and more advanced business administration courses.

**PROGRAM OUTCOMES**

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

**CAREERS**

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

For information contact Tanya Patrick, 503-594-3076 or tanyap@clackamas.edu

**ADMINISTRATIVE OFFICE PROFESSIONAL ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR**

<table>
<thead>
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<td>BT-121 Data Entry</td>
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<td>BT-122 Keyboard Skillbuilding</td>
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<td>BT-124 Business Editing I</td>
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### SECOND TERM

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<td>BA-156 Business Forecasting</td>
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<td>BA-177 Payroll Accounting</td>
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<tr>
<td>BA-212 Financial Accounting II or BA-112 General Accounting II</td>
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<td>BA-251 Supervisory Management</td>
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### THIRD TERM

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<td>BA-285 Human Relations in Business</td>
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<td>BT-110 Income Tax Preparation</td>
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* For this certificate, BA-104 meets the Related Instruction Computation requirement.

### WINTER TERM

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<tbody>
<tr>
<td>BA-111 General Accounting or BA-211 Financial Accounting I</td>
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<td>BA-125 Business Editing II</td>
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<td>BA-160 Word I</td>
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### SPRING TERM

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<tbody>
<tr>
<td>BA-228 Computerized Accounting</td>
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<td>BA-161* Word II</td>
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<td>BA-172 Introduction to Microsoft Outlook</td>
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<tr>
<td>BA-216 Office Procedures</td>
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<td>WP-121 English Composition</td>
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### ADMINISTRATIVE OFFICE PROFESSIONAL ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

<table>
<thead>
<tr>
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<td>BA-218 Personal Finance</td>
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<tr>
<td>BA-226 Business Law</td>
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<td>BA-285 Human Relations in Business</td>
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<td>BT-262 Integrated Projects</td>
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### WINTER TERM

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<tr>
<td>BA-104* Business Math</td>
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<tr>
<td>BA-205 Solving Communication Problems with Technology</td>
</tr>
<tr>
<td>BA-206 Management Fundamentals</td>
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<td>— — Administrative Office Professional program electives</td>
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### SPRING TERM

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<td>BA-224 Human Resource Management</td>
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<td>BA-280 Business/CWE</td>
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<tr>
<td>BT-271 Advanced Business Projects</td>
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<tr>
<td>— — Administrative Office Professional program electives</td>
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</table>

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

**ADMINISTRATIVE OFFICE PROFESSIONAL PROGRAM ELECTIVES**

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

---

### Administrative Office Assistant

**Certificate**

This program provides a strong foundation of basic skills in office administration. Emphasis is placed on critical thinking and human relations skills. Course work includes Related Instruction requirements, industry-standard computer programs and specific business and office administration courses.

**PROGRAM OUTCOMES**

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

Continued
Administrative Office Assistant continued…

**CAREERS**

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

For information contact Tanya Patrick, 503-594-3076 or tanyap@clackamas.edu

**ADMINISTRATIVE OFFICE ASSISTANT CERTIFICATE**

**FALL TERM**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>BA-104*</td>
<td>Business Math</td>
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<td>Introduction to Business Computing</td>
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<tr>
<td>BT-121</td>
<td>Data Entry</td>
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<tr>
<td>BT-122</td>
<td>Keyboarding Skillbuilding</td>
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<tr>
<td>BT-124</td>
<td>Business Editing I</td>
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<td>WR-121</td>
<td>English Composition</td>
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**WINTER TERM**

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<tr>
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<td>Human Relations in Business</td>
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<td>BT-125</td>
<td>Business Editing II</td>
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<td>BT-160</td>
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<td>CS-135S</td>
<td>Microsoft Excel</td>
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<td>— —</td>
<td>Any BA/BT course not already included in the Administrative Office Assistant program</td>
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**SPRING TERM**

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<th>COURSE</th>
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<tr>
<td>BA-111</td>
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<tr>
<td>or BA-211</td>
<td>Financial Accounting I</td>
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<td>BA-280</td>
<td>Business/CWE</td>
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<tr>
<td>BT-161</td>
<td>Word II</td>
</tr>
<tr>
<td>BT-172</td>
<td>Introduction to Microsoft Outlook</td>
</tr>
<tr>
<td>BT-216</td>
<td>Office Procedures</td>
</tr>
</tbody>
</table>

Credits required for certificate 50

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

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**Administrative Office Assistant Training**

**Certificate**

This is a targeted job training program designed for those seeking new career opportunities in administrative office support positions. This program covers two-thirds of the required curriculum for the Administrative Office Assistant (one-year) certificate program.

**PROGRAM OUTCOMES**

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

**CAREERS**

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

For information contact Tanya Patrick, 503-594-3076 or tanyap@clackamas.edu

---

**Automotive Service Technology**

**Professional Upgrade**

Associate of Applied Science Degree

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

**PROGRAM OUTCOMES**

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

**CAREERS**

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

For information contact the Automotive Department, 503-594-3047.

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

**FALL TERM**

<table>
<thead>
<tr>
<th>COURSE</th>
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<tr>
<td>AM-121</td>
<td>General Auto Repair I</td>
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<tr>
<td>AM-129</td>
<td>Electrical Systems</td>
</tr>
<tr>
<td>AM-130</td>
<td>Brake Systems</td>
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**WINTER TERM**

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<tr>
<th>COURSE</th>
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<tbody>
<tr>
<td>AM-122</td>
<td>General Auto Repair II</td>
</tr>
<tr>
<td>AM-131</td>
<td>Chassis Systems</td>
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<tr>
<td>MTH-050</td>
<td>Technical Mathematics I</td>
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<td>or MTH-065</td>
<td>Algebra II</td>
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</table>

Credits required for certificate 40
SPRING TERM
AM-123 General Auto Repair III 3
AM-133 Engine Systems 7
WR-101 Communication Skills: Occupational Writing or WR-121 English Composition 3-4

SUMMER TERM
AM-280* Auto Mechanics/CWE 6

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

FALL TERM CREDITS
AM-245 Automatic Transmission Systems 7
WLD-102 Introduction to Welding 2
or AB-112 Collision Repair Welding I
— — Human Relations requirement (see page 53) (Recommended: PSY-101 or COMM-100) 3
— — PE/Health requirements (see page 53) (Recommended: HE-252) 3

WINTER TERM
AM-243 Fuel & Emission Control Systems 7
AM-244 Advanced Electrical Systems 7

SPRING TERM
AM-224 Comfort Systems 4
AM-228 Service Shop Management 4
AM-235 Power Transmission Systems 7

Credits required for degree 93-95

*May be taken after the first year

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

Under Car Technician – Automatic Transmission

The Under Car Technician - Automatic Transmission Program combines the initial courses of the Associate of Applied Science (AAS) Automotive Service Technology degree to provide the student with an opportunity to gain entry level employment. This alternate first-year schedule offers accelerated employment qualification for the student. These courses train the student in the skills necessary to earn certification from Automotive Service Excellence (ASE) in the specified areas of A2, A3, A4, and C1, as described in the ASE Alignment Section. Coursework also qualifies the student to earn American Welding Society (AWS) certification. The National Institute for Automotive Service Excellence requires two years of documented time in trade before testing, and this nine month program is awarded 4.5 months equivalency. The AWS requires one year of documented time in trade before testing.

PROGRAM OUTCOMES
Program outcomes include the skills for entry-level employment in the industry as auto technicians maintaining and repairing passenger cars and light trucks, including automatic and manual transmission rebuilding and service, drive axle service and repair, transfer case service and repair, front-end repair and alignment, and starting and charging system repair. These classes comprise an alternate first year schedule of our AAS degree in Automotive Service Technology. They focus on one skill set necessary for employment within the automotive service industry.

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

For information, contact David Bradley, Automotive Department Chair, 503-594-3051, or bradleyd@clackamas.edu

UNDER CAR TECHNICIAN—AUTOMATIC TRANSMISSION CAREER PATHWAY CERTIFICATE

FALL TERM CREDITS
AM-121 General Auto Repair I 3
AM-129 Electrical Systems 7
AM-245 Automatic Transmission Systems 7

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

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

Credits required for certificate 43

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

Continued
Under Car Technician – Manual Transmission

Career Pathway Certificate

The Under Car Technician - Manual Transmission Program combines the initial courses of the Associate of Applied Science (AAS) Automotive Service Technology degree to provide the student with an opportunity to gain entry level employment. This alternate first-year schedule offers accelerated employment qualification for the student. These courses train the student in the skills necessary to earn certification from Automotive Service Excellence (ASE) in the specified areas of A3, A4, A5, and C1, as described in the ASE Alignment Section. Coursework also qualifies the student to earn American Welding Society (AWS) certification. The National Institute for Automotive Service Excellence requires two years of documented time in trade before testing, and this nine month program is awarded 4.5 months equivalency. The AWS requires one year of documented time in trade before testing.

PROGRAM OUTCOMES
Program outcomes include the skills for entry-level employment in the industry as auto technicians maintaining and repairing passenger cars and light trucks, including manual transmission rebuilding, drive axle repair and service, transfer case repair and service, front-end repair and alignment, brake service, and starting and charging system repair. These classes comprise an alternate first-year schedule of our AAS degree in Automotive Service Technology. They focus on one skill set necessary for employment within the Automotive Service industry.

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

For information contact David Bradley, Automotive Department Chair, 503-594-3051, or bradleyd@clackamas.edu

UNDER CAR TECHNICIAN—MANUAL TRANSMISSION CAREER PATHWAY CERTIFICATE

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<thead>
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<td>AM-235</td>
<td>Power Transmission Systems</td>
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<tr>
<td>AM-228</td>
<td>Service Shop Management</td>
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</table>

Credits required for certificate | 43 |

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

Under Hood Technician

Career Pathway Certificate

The Under Hood Technician Program combines the initial courses of the Associate of Applied Science (AAS) Automotive Service Technology degree to provide the student with an opportunity to gain entry level employment. This alternate first-year schedule offers accelerated employment qualification for the student. These courses train the student in the skills necessary to earn certification from Automotive Service Excellence (ASE) in the specified areas of A1, A6, A7, A8, C1, and L1, as described in the ASE Alignment Section. Coursework also qualifies the student to earn American Welding Society (AWS) certification. The National Institute for Automotive Service Excellence requires two years of documented time in trade before testing, and this nine month program is awarded 4.5 months equivalency. The AWS requires one year of documented time in trade before testing.

PROGRAM OUTCOMES
Program outcomes include the skills for entry-level employment in the industry as auto technicians maintaining and repairing passenger cars and light trucks, including engine repair, engine performance, electrical/electronic systems repair, diagnostics, and heating and air conditioning. These classes comprise an alternate first year schedule of our AAS degree in Automotive Service Technology. They focus on one skill set necessary for employment within the Automotive Service industry.

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

For information, contact David Bradley, Automotive Department Chair at 503-594-3051, or bradleyd@clackamas.edu

UNDER HOOD TECHNICIAN CAREER PATHWAY CERTIFICATE

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<tr>
<td>AM-122</td>
<td>General Auto Repair II</td>
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<tr>
<td>AM-243</td>
<td>Fuel &amp; Emission Control Systems</td>
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<tr>
<td>AM-244</td>
<td>Advanced Electrical Systems</td>
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</table>
CAREER TECHNICAL PROGRAMS

SPRING TERM
AM-224 Comfort Systems 4
AM-133 Engine Systems 7
AM-228 Service Shop Management 4

Credits required for certificate 44

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

Business

Associate of Applied Science Degree

This degree establishes a foundation for a successful management career while enabling students to explore a wide variety of business topics. The program is designed to enhance skills and employability for students who desire a career path in management as well as those who choose the entrepreneurial path. Students have the option focusing on Accounting, Human Resource Management, Marketing, or Project Management; or selecting courses from a cross section of these disciplines.

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

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

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

BUSINESS ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM CREDITS
BA-101 Introduction to Business 4
BA-104* Business Math
or MTH-065 Algebra I 3-4
BA-224 Human Resource Management 4
WR-121 English Composition 4

WINTER TERM
BA-131 Introduction to Business Computing 4
BA-223 Principles of Marketing 4
BA-285 Human Relations in Business 4
— — Business program electives 3

SPRING TERM
BA-205 Solving Communication Problems with Technology 4
BA-211 Financial Accounting I 4
BA-226 Business Law I 4
— — Business program electives 3

BUSINESS ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FALL TERM CREDITS
BA-206 Management Fundamentals 4
BA-212 Financial Accounting II 4
— — PE/Health requirement (see page 53) 1
— — Business program electives 7

WINTER TERM
BA-213 Decision Making with Accounting Information 4
— — Business program electives 12

SPRING TERM
BA-217 Budgeting for Managers 3
WR-227 Technical Report Writing or BA-225 Business Report Writing 3-4
BA-280 Business/CWE 3
— — Business program electives 7

Credits required for this degree: 93-95

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

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

Certificate

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

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

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

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

BUSINESS MANAGEMENT CERTIFICATE

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</table>

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

Management Fundamentals

Career Pathway Certificate

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

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

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

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

MANAGEMENT FUNDAMENTALS CAREER PATHWAY CERTIFICATE

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<td>WR-121</td>
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</table>

Credits required for certificate 23

CAD/CAM Technology

Associate of Applied Science Degree

This program combines training in computer-aided drafting (CAD) and computer-aided manufacturing (CAM). Course work emphasizes machine tool fundamentals, computer numerical control (CNC) and computer-aided manufacturing.

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

CAREERS
Career opportunities may include CNC programmer and operator, CAD technician, manufacturing engineering technician and CAD/CAM technician. For information contact Mike Mattson, 503-594-3322 or mattsonm@clackamas.edu
Clinical Laboratory Assistant

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

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

PROGRAM REQUIREMENTS AND PREREQUISITES

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

To determine the availability of applications and the appropriate deadlines for each cohort, please visit the Health Sciences website: [http://www.clackamas.edu/Programs/Clinical-Laboratory-Assistant.aspx](http://www.clackamas.edu/Programs/Clinical-Laboratory-Assistant.aspx)

Applicants are advised that a high level of dexterity, the ability to multi-task, and a high degree of attention to detail are required for the successful completion of this program.

During the application process, CLA applicants must:

- Meet appropriate placement scores in reading, writing, and math by either taking the placement exams or by providing proof of comparable assessment. The CLA program accepts competencies in writing, math, and reading as measured by CCC placement assessments dated no earlier than 2003, or previous college coursework as documented on official college transcripts. To be eligible to apply, students must show placement by: 1) passing WR-095 or placement in WR-121; 2) passing RD-090 or placement in RD-115.
- Have completed MA-110 Medical Terminology, and MTH-050 Technical Mathematics I or MTH-065 Algebra II. Curriculum prerequisites and requirements may be subject to change. In order to assure students have the most current information, please review the department website.
Clinical Laboratory Assistant continued…

- Provide; 1) proof of a recent physical examination by a licensed healthcare provider, 2) required immunizations, 3) a current AHA or ASHI Healthcare Provider CPR, First Aid card, and complete a criminal history background check and drug testing as arranged by the Health Sciences department. Students may also be subject to a second drug and criminal screen just prior to clinical placement depending on clinical site requirements.

CLA students will be required to participate in unpaid, supervised externships in ambulatory or acute care laboratory settings.

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

CLINICAL LABORATORY ASSISTANT APPLICATION REQUIREMENTS
Application packets with admission procedures and requirements are available online, http://www.clackamas.edu/Programs/Clinical-Laboratory-Assistant.aspx

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

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

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

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

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<th>COURSE</th>
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<td>Medical Terminology 3</td>
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<td>MTH-050</td>
<td>Technical Mathematics I 3-4</td>
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<tr>
<td>or MTH-065</td>
<td>Algebra II 3-4</td>
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CLINICAL LABORATORY ASSISTANT CERTIFICATE

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<tr>
<td>FALL TERM</td>
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<tr>
<td>BI-120*</td>
<td>Introduction to Human Anatomy &amp; Physiology 4</td>
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<td>CLA-100</td>
<td>Introduction to Healthcare 2</td>
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<tr>
<td>CLA-101</td>
<td>Clinical Laboratory Assistant Skills I 4</td>
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<td>CLA-118</td>
<td>Phlebotomy for Clinical Laboratory Assistants 2</td>
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<tr>
<td>WR-101</td>
<td>Communication Skills: Occupational Writing or WR-121 English Composition 3-4</td>
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<td>WINTER TERM</td>
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<tr>
<td>CLA-102</td>
<td>Clinical Laboratory Assistant Skills II 4</td>
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<td>CLA-115</td>
<td>Laboratory Administrative Skills 2</td>
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<tr>
<td>CLA-119</td>
<td>Phlebotomy/Laboratory Practicum I 3</td>
</tr>
<tr>
<td>CLA-130</td>
<td>Specimen Collection 1</td>
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<tr>
<td>CS-120</td>
<td>Survey of Computing 4</td>
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<td>CLA-103</td>
<td>Clinical Laboratory Assistant Skills III 4</td>
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<tr>
<td>CLA-125</td>
<td>Introduction to Clinical Research 2</td>
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<tr>
<td>COMM-100</td>
<td>Basic Speech Communication or COMM-111 Public Speaking 3-4</td>
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<td>or COMM-218</td>
<td>Interpersonal Communication 3-4</td>
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<tr>
<td>PSY-101</td>
<td>Human Relations 3</td>
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</table>

Credits required for certificate 51-54

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

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

Note: All clinical practicum courses are Pass/No Pass. All other courses are letter grades and must be passed with a C grade or better in order to continue to the next term.

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

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

Visit Clackamas Community College on the web at www.clackamas.edu
Collision Repair and Refinishing Technology

Associate of Applied Science Degree

The Collision Repair and Refinishing program simulates real working conditions in a well-equipped modern shop facility. Training combines intensive theory and practical lab experience tailored to specific needs. Course work includes one term of cooperative work experience with a local employer. The flexibility of the program allows students to enter any term and proceed at their own pace. Technicians repair or replace parts, straighten structure, install and adjust glass and components, repair electrical systems, restraints, suspension components, brakes, prepare all types of surfaces for necessary refinishing operations, mix and apply modern urethane and waterborne paint products, and finish their work to industry standards. Skills learned include welding, metal straightening, filler use, plastic repair, surface preparation, masking, product selection, mixing, color matching and application techniques, as well as detailing and troubleshooting.

Program Outcomes

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

Careers

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

For information contact Dave Bradley, 503-594-3051, or the Automotive Department, 503-594-3047.

Collision Repair and Refinishing Technology Associate of Applied Science Degree: 1st Year

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<th>FIRST TERM</th>
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<td>AB-112</td>
<td>Collision Repair Welding I</td>
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<td>AB-113</td>
<td>Collision Repair I/Nonstructural</td>
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<tr>
<td>ABR-125</td>
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<tr>
<td>MTH-050</td>
<td>Technical Mathematics I</td>
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<td>or MTH-065 Algebra II</td>
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<td>ABR-127</td>
<td>Collision Repair Refinishing II*</td>
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<td>AB-222</td>
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<td>Collision Repair Refinishing III</td>
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Collision Repair and Refinishing Technology Associate of Applied Science Degree: 2nd Year

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<td>AB-224</td>
<td>Collision Repair IV/Advanced Structural</td>
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<td>Production Shop Techniques</td>
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<td>or ABR-162</td>
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Credits required for degree 92-94

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

Collision Repair and Refinishing Technology

Career Pathway Certificate

The Collision Repair and Refinishing Technology program simulates real working conditions in a well-equipped modern shop facility. Training combines intensive theory and practical lab experience tailored to specific needs. In order to complete the course in three consecutive terms, students must start fall term.

Technicians repair or replace parts, straighten frames and unibody structure, install and adjust components and glass, repair electrical systems, restraints, suspension components, brakes, prepare all types of surfaces for necessary refinishing operations, mix and apply modern waterborne and solvent-borne paint products, and finish their work to industry standards. Skills learned include welding, metal straightening, filler use, plastic repair, surface preparation, masking, product selection, mixing, color matching and application techniques, as well as detailing and troubleshooting. This certificate qualifies students to apply for an I-CAR Pro Level 1 Certification.
Collision Repair and Refinishing continued…

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

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

For information contact Dave Bradley, 503-594-3051, or the Automotive Department, 503-594-3047.

COLLISION REPAIR AND REFINISHING CERTIFICATE

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<td>ABR-129</td>
<td>Collision Repair/Refinishing III</td>
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Credits required for certificate 44

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

Computer & Network Administration

Certificate

Associate of Applied Science Degree

The Computer & Network Administration program prepares students for technical support careers specializing in network administration and microcomputer support. Students may earn either a one-year Certificate of Completion or two-year Associate of Applied Science degree. The course work emphasizes development of analytical and problem-solving skills in addition to specific hardware and software configurations. Cooperative Work Experience (CWE) is supervised real-world employment that supplements the academic classroom environment.

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

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

CAREERS
Career opportunities include network specialist, computer service technician, field engineer, customer service engineer, computer technician, and PC/LAN support specialist. For information contact Debra Carino, 503-594-3170 or dcarino@clackamas.edu

COMPUTER & NETWORK ADMINISTRATION CERTIFICATE

FALL TERM

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<td>CS-150</td>
<td>Computer Technician Orientation</td>
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<td>CS-225</td>
<td>Computer End-User Support</td>
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<td>CS-227</td>
<td>Computer Hardware &amp; Repair I</td>
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WINTER TERM

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<td>CS-228</td>
<td>Computer Hardware &amp; Repair II</td>
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<td>CS-240W</td>
<td>Windows Desktop Administration</td>
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<tr>
<td>WR-101</td>
<td>Communication Skills: Occupational Writing or WR-121 English Composition</td>
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SPRING TERM

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<td>CS-279W</td>
<td>Windows Server Administration</td>
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CAREER TECHNICAL PROGRAMS

SUMMER TERM
CS-125H HTML & Web Site Design 3
CS-280 Computer Science/CWE 3
MTH-050 Technical Mathematics I 3
— — Human Relations requirement (see page 53) 3-4
Credits required for certificate 51-53

COMPUTER & NETWORK ADMINISTRATION ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR
Complete certificate program

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

FALL TERM
CS-135DB Microsoft Access 3
CS-280 Computer Science/CWE 3
— — Computer & Network Administration program elective 6-8
— — PE/Health requirement (see page 53) 1

WINTER TERM
CS-240M MacOS Administration 3
CS-275 Database Design 3
CS-284 Network Security 3
CS-288W Windows Network Administration 4

SPRING TERM
CS-280 Computer Science/CWE 3
CS-289 Web Server Administration 4
CS-297N Network Capstone 4
— — Computer & Network Administration program elective 3-4

Credits required for degree 91-96

COMPUTER & NETWORK ADMINISTRATION PROGRAM ELECTIVES
Complete 9-12 credits from the following:

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

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

Computer Application Support

Certificate

Associate of Applied Science Degree
The Computer Application Support program prepares students for a variety of technical support careers including help desk, training, and design positions. Students may earn either a one-year certificate or a two-year Associate of Applied Science degree. The course work emphasizes development of analytical and problem-solving skills in addition to specific hardware and software configurations. Cooperative work experience (CWE) is supervised real-world experience that supplements the academic classroom environment.

PROGRAM REQUIREMENTS
Prerequisites for first term classes include completed course work for CS-120 Survey of Computing, WR-095 Paragraph to Essay and MTH-065 Algebra II or placement in BA-131 Introduction to Business Computing, WR-121 English Composition, and MTH-095 Algebra III. This program is an open program, meaning that students may take any class in the program for which they have completed the prerequisite.

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

CAREERS
Career opportunities include web designer, database specialist, software trainer, software installation and maintenance engineer, computer applications specialist, client support representative, customer service engineer, help desk technician or software consultant.

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

COMPUTER APPLICATION SUPPORT CERTIFICATE

FALL TERM
CS-140 Introduction to Operating Systems 4
CS-150 Computer Technician Orientation 3
CS-225 Computer End-User Support 3
CS-227 Computer Hardware & Repair I 4

WINTER TERM
CS-125H HTML & Web Site Design 3
CS-135W Microsoft Word 3
CS-179 Networking I 3
CS-240W Windows Desktop Administration 3

SPRING TERM
BA-103 Business Strategies for Computer Consultants 3
CS-135I Advanced Web Design with Dreamweaver 3
CS-135S Microsoft Excel 3
CS-240L Linux Administration 4

Continued
## Computer Application Support continued…

### SUMMER TERM

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### COMPUTER APPLICATION SUPPORT

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

Complete certificate program.

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

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### ADDITIONAL COURSES FROM FOCUS AREA

Complete all courses from one of the following Focus Areas:

### APPLICATION SUPPORT

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### ACCOUNTING

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### PROGRAMMING

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<td>CS-162</td>
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<td>CS-260</td>
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### COMPUTER APPLICATION SUPPORT PROGRAM ELECTIVES

Complete 3-4 credits from the following:

- Any Computer Science course numbered CS-125 or higher

---

## Computer Information Systems: Health Informatics

### Associate of Applied Science Degree

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

### PROGRAM REQUIREMENTS

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

### PROGRAM OUTCOMES

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

### CAREERS

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

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

For information contact Debra Carino, 503-594-3170 or dcarino@clackamas.edu
COMPUTER INFORMATION SYSTEMS: HEALTH INFORMATICS
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

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

FALL TERM
CS-140 Introduction to Operating Systems 4
or elective Computer Information Systems: Health Informatics program elective 4
CS-150 Computer Technician Orientation 3
or elective Computer Information Systems: Health Informatics program elective 3
CS-225 Computer End User Support 3
— — Computer Information Systems: Health Informatics program elective (Recommended: CS-227) 4

WINTER TERM
BA-211 Financial Accounting I 4
CS-179 Networking I 3
CS-275 Database Design 3
MA-110 Medical Terminology 3

SPRING TERM
BA-205 Solving Communication Problems with Technology 4
CS-135DB Microsoft Access 3
(n)HIM-110 Health Information Tech I 4
— — Computer Information Systems: Health Informatics program elective (Recommended: Additional CS-280 credits) 3
— — Human Relations requirement (see page 53) 3-4

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

FALL TERM
CS-161 Computer Science I 4
(n)CS-276 Advanced SQL 4
(n)HIM-182 Health Care Delivery Systems 3
(n)HIM-283 Health Information Systems 4

WINTER TERM
CS-162 Computer Science II 4
(n)CS-245 Project Management–Information Systems 4
(n)HIM-285 Healthcare Financing & Compliance 3
— — Computer Information Systems: Health Informatics program elective (Recommended: CS-240W) 3-4

SPRING TERM
(n)CS-24+(+) Systems Analysis 4
CS-280 Computer Science/CWE 4
— — Computer Information Systems: Health Informatics program elective 4
— — PE/Health Requirement (see page 53) 1-3
(Recommended: HE-252)

Credits required for degree 96-101

COMPUTER INFORMATION SYSTEMS: HEALTH INFORMATICS
PROGRAM ELECTIVES

<table>
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<th>COURSE</th>
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<td>BA-131</td>
<td>Introduction to Business Computing 4</td>
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<td>BA-224</td>
<td>Human Resource Management 4</td>
</tr>
<tr>
<td>BI-112</td>
<td>Biology for Health Sciences 4</td>
</tr>
<tr>
<td>BI-231</td>
<td>Human Anatomy &amp; Physiology I 4</td>
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<tr>
<td>BI-232</td>
<td>Human Anatomy &amp; Physiology II 4</td>
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<td>BI-233</td>
<td>Human Anatomy &amp; Physiology III 4</td>
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<td>CS-133VB</td>
<td>Visual Basic.NET I 3</td>
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<td>CS-140</td>
<td>Introduction to Operating Systems 4</td>
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<td>CS-150</td>
<td>Computer Technician Orientation 3</td>
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<td>CS-179</td>
<td>Networking I 3</td>
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<td>Computer End User Support 3</td>
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<td>Computer Hardware &amp; Repair I 4</td>
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<td>CS-229</td>
<td>Networking II 4</td>
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<td>CS-240L</td>
<td>Linux Administration 4</td>
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<td>CS-240W</td>
<td>Windows Desktop Administration 3</td>
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<td>CS-284</td>
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<td>(n)HIM-271</td>
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<td>(n)HIM-286</td>
<td>Data Management &amp; Analysis I Lab 2</td>
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Construction Trades,
General Apprenticeship

Certificate

Associate of Applied Science Degree

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

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

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

Continued
Construction Trades, General Apprenticeship continued...

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

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

Construction

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

Correction

Associate of Applied Science Degree

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

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

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

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

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

CAREER TECHNICAL PROGRAMS
Juvenile Corrections

Certificate

The Juvenile Corrections Certificate is a one-year program developed in cooperation with the Oregon Youth Authority. Students are prepared to interview for an entry level position in a juvenile correctional facility. The certificate curriculum is challenging and is aimed at providing the skills most desired for working within the juvenile corrections system in Oregon.

Course work includes cooperative work experience, hands-on experience in a correctional agency enabling students to demonstrate the skills and knowledge acquired in the academic courses in a practical manner.

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

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

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

JUVENILE CORRECTIONS CERTIFICATE

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<tr>
<td>CS-120</td>
<td>Survey of Computing 4</td>
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<td>MTH-050</td>
<td>Technical Mathematics I or MTH-065 Algebra II 3-4</td>
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<tr>
<td>PSY-200</td>
<td>Psychology as a Natural Science 4</td>
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<td>Psychology as a Social Science 4</td>
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<td>WR-121</td>
<td>English Composition 4</td>
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<td>PSY-215</td>
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<td>Introduction to Abnormal Psychology 4</td>
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<td>SOC-205</td>
<td>Social Stratification &amp; Social Systems 4</td>
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<td>Corrections Casework 3</td>
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<td>HE-205</td>
<td>Youth Addictions 3</td>
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Credits required for certificate 56-59

Criminal Justice

Associate of Applied Science Degree

The course work for this two-year program is designed to develop students’ knowledge and skills in the areas of law enforcement, courts and corrections. Areas emphasized include community policing, criminal investigation, routine patrol and criminological theory. Students gain an appreciation of the various parts of the criminal justice system and how they function as a whole. Students may enter this program any term.

The course work for this program includes cooperative work experience which affords the student opportunity for hands-on experience with many local, federal and state law enforcement agencies.

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

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

For general information or information about transferring to a four-year institution contact Ida Flippo, 503-594-3363 or iflipp@clackamas.edu

CRIMINAL JUSTICE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

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<td>CJA-250</td>
<td>Reporting, Recording, &amp; Testifying 4</td>
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CRIMINAL JUSTICE ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

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<td>or HE-205</td>
<td>Youth Addictions 4</td>
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<td>or HE-255</td>
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Credits required for degree 90-91

CRIMINAL JUSTICE PROGRAM ELECTIVES

Students select from the following:

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<td>COMM-140</td>
<td>Introduction to Intercultural Communication 4</td>
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<td>Interpersonal Communication 4</td>
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<td>COMM-227</td>
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<tr>
<td>GRN-183</td>
<td>Death and Dying 3</td>
</tr>
<tr>
<td>HDF-260</td>
<td>Understanding Child Abuse and Neglect 4</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong> 15</td>
</tr>
</tbody>
</table>

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

Dental Assistant

The Dental Assistant (DA) program is designed to prepare students for entry level positions in the dental care setting. The goal of the program is to graduate students that have demonstrated competencies in clinical and administrative practices as well as demonstrated work ethics and professional values consistent with that of the American Dental Association (ADA).

PROGRAM REQUIREMENTS AND PREREQUISITES

This limited entry program requires the applicant to meet the program requirements prior to being formally admitted into the program. The requirements are to be completed in a four-phase process, with specific timelines for each phase. Information regarding specific requirements and timelines are located at [http://www.clackamas.edu/Programs/Dental-Assistant.aspx](http://www.clackamas.edu/Programs/Dental-Assistant.aspx)

The applicant must follow all steps to be invited to continue through each phase of the admission process, with the final phase resulting in the opportunity to be invited for admission. The following is a general outline of the DA requirements; please refer to the most current application for additional information.

**PHASE 1:**
- Completed Dental Assistant program application.
- Placement assessments: Competency in writing, math, and reading as measured by CCC placement assessment scores. Students must either pass WR-095 or place into WR-121; pass MTH-060 or place into MTH-065; and pass RD-090 or place into RD-115 to be eligible to apply or show previous college coursework as documented on official college transcripts. Placements dated no earlier than 2003 will be accepted. Placement testing may be scheduled through the Harmony Campus Testing Center, 503-594-0636; or the main campus Testing Center, 503-594-3283.
- Non-refundable application fee.
- Only completed application packets will be processed allowing applicants to advance to Phase 2.

**PHASE 2:**
- Handwritten essay.

**PHASE 3:**
- Criminal history background check.
- Urine drug/alcohol screen (UDS).
- Candidates are required to pass the criminal history background check & urine drug/alcohol screen.
- DA students will be required to repeat the background check and UDS at their own expense within 30 days of practicum.

**PHASE 4:**
- Health and Physical Exam form.
- Proof of all immunizations.
- Current Tuberculin skin test (PPD) or negative chest x-ray results.
- Current American Heart Association, Health Provider CPR certification.
- Job Shadow (minimum 8 hours) in a dental setting.
- Letter of recommendation.

**ADMISSIONS REVIEW PHASE:**
- Notice of admission decision.

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

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

CAREERS

Career opportunities may include but are not limited to managed care facilities, private dental practices, state and county clinics, dental schools and the insurance industry. Application packets with admission procedures and requirements are available online at http://www.clackamas.edu/Programs/Dental-Assistant.aspx

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

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

DENTAL ASSISTANT CERTIFICATE

<table>
<thead>
<tr>
<th>FIRST TERM</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA-101 Dental Radiology I</td>
<td>3</td>
</tr>
<tr>
<td>DA-104 Clinical Procedures I</td>
<td>3</td>
</tr>
<tr>
<td>DA-107 Dental Materials I</td>
<td>3</td>
</tr>
<tr>
<td>DA-110 Clinical Practicum I</td>
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</tr>
<tr>
<td>DA-115 Dental Science</td>
<td>1</td>
</tr>
<tr>
<td>DA-125 Dental Infection Control</td>
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</tr>
<tr>
<td>WR-101 Communication Skills: Occupational Writing or WR-121 English Composition</td>
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<table>
<thead>
<tr>
<th>SECOND TERM</th>
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<tbody>
<tr>
<td>CS-120 Survey of Computing</td>
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<tr>
<td>DA-102 Dental Radiology II</td>
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<td>DA-105 Clinical Procedures II</td>
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<tr>
<td>DA-108 Dental Materials II</td>
<td>2</td>
</tr>
<tr>
<td>DA-120 Clinical Practicum II</td>
<td>5</td>
</tr>
<tr>
<td>DA-135 Pharmacology/Medical Emergencies</td>
<td>1</td>
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<thead>
<tr>
<th>THIRD TERM</th>
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<tbody>
<tr>
<td>DA-106 Clinical Procedures III</td>
<td>2</td>
</tr>
<tr>
<td>DA-130 Clinical Practicum III</td>
<td>8</td>
</tr>
<tr>
<td>DA-145 Dental Office Procedures</td>
<td>2</td>
</tr>
<tr>
<td>MTH-050 Technical Mathematics I or MTH-065 Algebra II</td>
<td>3-4</td>
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<tr>
<td>PSY-101 Human Relations</td>
<td>3</td>
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</tbody>
</table>

Credits required for certificate: 49-51

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

Current Healthcare Provider level CPR (AHA) are required during practicums and must be taken prior to the first term practicum. All DA students will be required to complete a criminal history background, provide proof of immunization, and students will be asked to take a drug test as arranged by the department.

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

Core curriculum is sequential and may not be taken out of order.

Core curriculum is intended to be completed over three consecutive terms.

Digital Multimedia Communications

Associate of Applied Science Degree

The Digital Multimedia Communications (DMC) degree is designed to successfully prepare students for careers in the expanding fields of digital media productions and communications.

PROGRAM OUTCOMES

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

CAREERS

Some of the careers available in media include: production designer, art department coordinator, camera operator, writer (general, film and documentary), editor, visual effects production, multimedia producer, sound mixer and recordist, boom operator, post production sound design, duplication, music composer, looping and foley, mobile location recording, voice-over work, audio for interactive multimedia, steadicam operator, assistant editor, weblog contributor, broadcast journalist, podcast writer and production, script supervisor and continuity, videographer, production assistant, graphic artist, photographer (still), location assistant, storyboard artist, art assistant, web designer, electronic news gatherer, web radio program editor, live sound engineer, broadcast reporter and other emerging opportunities.

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

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

<table>
<thead>
<tr>
<th>FALL TERM</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>ART-115 Basic Design: Two Dimensional Design</td>
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<tr>
<td>DMC-100 Introduction to Media Arts</td>
<td>3</td>
</tr>
<tr>
<td>WR-121 English Composition</td>
<td>4</td>
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<td>— PE/Health requirement (see page 53)</td>
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<tr>
<td>— Digital Multimedia Communications program electives</td>
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<tr>
<td>DMC-104 Digital Video Editing</td>
<td>4</td>
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<tr>
<td>J-211 Mass Media &amp; Society</td>
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<tr>
<td>or COMM-212 Mass Media &amp; Society</td>
<td>4</td>
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<td>MTH-065 Algebra II (or higher level of math)</td>
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<tr>
<td>COMM-100 Basic Speech Communication or PSY-101 Human Relations</td>
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Continued
Digital Multimedia Communications continued…

SPRING TERM
<table>
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<tr>
<th>Course</th>
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<tr>
<td>Focus Area courses</td>
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</tr>
<tr>
<td>Digital Multimedia Communications program electives</td>
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SUMMER TERM

DMC-280 Digital Multimedia Communications/CWE 3

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

FALL TERM

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>HUM-233 Electronic Culture</td>
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<tr>
<td>or SSC-233 Electronic Culture</td>
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<tr>
<td>Focus Area courses</td>
<td>4-6</td>
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<tr>
<td>Digital Multimedia Communications program electives</td>
<td>10</td>
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WINTER TERM

<table>
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<tr>
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<td>Humanities program electives</td>
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<tr>
<td>Focus Area courses</td>
<td>6-8</td>
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SPRING TERM

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BA-146 Entertainment Law &amp; New Media</td>
<td>3</td>
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<tr>
<td>DMC-191 Digital Multimedia Communications Portfolio Project II</td>
<td>3</td>
</tr>
<tr>
<td>or DMC-192 Digital Multimedia Communications Portfolio Project III</td>
<td>3-4</td>
</tr>
<tr>
<td>Focus Area course</td>
<td>4</td>
</tr>
<tr>
<td>Digital Multimedia Communications program electives</td>
<td>4</td>
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Credits required for degree 90-110

ADDITIONAL COURSES FROM FOCUS AREA

Complete all courses from one of the following Focus Areas

MOTION GRAPHICS & COMPUTER ANIMATION

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ART-106 Animation &amp; Motion Graphics I</td>
<td>3</td>
</tr>
<tr>
<td>or DMC-106 Animation &amp; Motion Graphics I</td>
<td>3</td>
</tr>
<tr>
<td>ART-107 Animation &amp; Motion Graphics II</td>
<td>3</td>
</tr>
<tr>
<td>or DMC-107 Animation &amp; Motion Graphics II</td>
<td>3</td>
</tr>
<tr>
<td>ART-131 Drawing</td>
<td>3</td>
</tr>
<tr>
<td>or ART-132 Drawing</td>
<td>3</td>
</tr>
<tr>
<td>or ART-133 Drawing</td>
<td>3</td>
</tr>
<tr>
<td>ART-221 Flash Animation: Design &amp; Techniques</td>
<td>3</td>
</tr>
<tr>
<td>ART-222 Advanced 2D Animation</td>
<td>3</td>
</tr>
<tr>
<td>ART-225 Computer Graphics I</td>
<td>3</td>
</tr>
<tr>
<td>ART-226 Computer Graphics II</td>
<td>3</td>
</tr>
<tr>
<td>CS-195 Flash Web Development</td>
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WEB DESIGN

<table>
<thead>
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<th>Course</th>
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<tbody>
<tr>
<td>ART-116 Basic Design: Color Theory &amp; Composition</td>
<td>3</td>
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<tr>
<td>ART-221 Flash Animation: Design &amp; Techniques</td>
<td>3</td>
</tr>
<tr>
<td>ART-227 Computer Graphics III</td>
<td>3</td>
</tr>
<tr>
<td>ART-262 Digital Photography &amp; Photo-Imaging</td>
<td>3</td>
</tr>
<tr>
<td>BA-103 Business Strategies for Computer Consultants</td>
<td>3</td>
</tr>
<tr>
<td>CS-125H HTML &amp; Web Site Design</td>
<td>3</td>
</tr>
<tr>
<td>CS-135I Advanced Web Design with Dreamweaver</td>
<td>3</td>
</tr>
<tr>
<td>CS-195 Flash Web Development</td>
<td>3</td>
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</table>

MULTIMEDIA JOURNALISM

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>J-134 Photojournalism</td>
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</tr>
<tr>
<td>J-215 College Newspaper Lab: Writing &amp; Photography</td>
<td>3</td>
</tr>
<tr>
<td>J-216 Reporting</td>
<td>4</td>
</tr>
<tr>
<td>or J-230 Multimedia Reporting</td>
<td>4</td>
</tr>
<tr>
<td>J-220 Introduction to Broadcast Journalism</td>
<td>4</td>
</tr>
<tr>
<td>J-221 Broadcast Journalism</td>
<td>4</td>
</tr>
<tr>
<td>or J-226 College Newspaper: Design &amp; Production</td>
<td>4</td>
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FILM STUDIES

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>DMC-264 Digital Filmmaking</td>
<td>4</td>
</tr>
<tr>
<td>DMC-265 Advanced Digital Filmmaking</td>
<td>4</td>
</tr>
<tr>
<td>DMC-195 American Film</td>
<td>4</td>
</tr>
<tr>
<td>or ENG-195 American Film</td>
<td>4</td>
</tr>
<tr>
<td>DMC-295 Revolutionary Film</td>
<td>4</td>
</tr>
<tr>
<td>or ENG-295 Revolutionary Film</td>
<td>4</td>
</tr>
<tr>
<td>ENG-105 Introduction to Literature: Drama</td>
<td>4</td>
</tr>
<tr>
<td>WR-262 Introduction to Screenwriting</td>
<td>4</td>
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</table>

VIDEO PRODUCTION

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ART-106 Animation &amp; Motion Graphics I</td>
<td>3</td>
</tr>
<tr>
<td>or DMC-106 Animation &amp; Motion Graphics I</td>
<td>3</td>
</tr>
<tr>
<td>DMC-205 Directing for Film &amp; Video</td>
<td>1</td>
</tr>
<tr>
<td>DMC-242 Field Recording &amp; Sound Design for Media</td>
<td>3</td>
</tr>
<tr>
<td>DMC-247 Music, Sound &amp; Moviemaking</td>
<td>3</td>
</tr>
<tr>
<td>or MUS-247 Music, Sound &amp; Moviemaking</td>
<td>3</td>
</tr>
<tr>
<td>DMC-264 Digital Filmmaking</td>
<td>4</td>
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<tr>
<td>DMC-265 Advanced Digital Filmmaking</td>
<td>4</td>
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<tr>
<td>WR-262 Introduction to Screenwriting</td>
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AUDIO & SOUND ENGINEERING

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>DMC-147 Music, Sound, and Moviemaking</td>
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<tr>
<td>or MUS-147 Music, Sound, and Moviemaking</td>
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<tr>
<td>DMC-242 Field Recording &amp; Sound Design for Media</td>
<td>3</td>
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<tr>
<td>MUS-101 Music Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>MUS-107 Introduction to Audio Recording I</td>
<td>3</td>
</tr>
<tr>
<td>MUS-108 Introduction to Audio Recording II</td>
<td>3</td>
</tr>
<tr>
<td>MUS-109 Introduction to Audio Recording III</td>
<td>3</td>
</tr>
<tr>
<td>MUS-148 Live Sound Engineering</td>
<td>3</td>
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MUSIC & SOUND FOR MEDIA

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>DMC-242 Field Recording &amp; Sound Design for Media</td>
<td>3</td>
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<tr>
<td>MUS-247 Music, Sound, and Moviemaking</td>
<td>3</td>
</tr>
<tr>
<td>or MUS-247 Music, Sound, and Moviemaking</td>
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</tr>
<tr>
<td>MUS-101 Music Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>MUS-107 Introduction to Audio Recording I</td>
<td>3</td>
</tr>
<tr>
<td>MUS-141 Introduction to the Music Business</td>
<td>3</td>
</tr>
<tr>
<td>MUS-142 Introduction to Electronic Music I</td>
<td>3</td>
</tr>
<tr>
<td>MUS-143 Introduction to Electronic Music II</td>
<td>3</td>
</tr>
<tr>
<td>MUS-144 Introduction to Electronic Music III</td>
<td>3</td>
</tr>
<tr>
<td>MUS-145 Introduction to Digital Sound, Video &amp; Animation</td>
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</tbody>
</table>
# Entry Level Multimedia Journalist

**Career Pathway Certificate**

The Entry Level Multimedia Journalist certificate prepares students for entry level positions in the field of multimedia and journalism. Students attain knowledge and learn skills to seek careers in creative and support professions related to multimedia and broadcast journalism, such as visual and audio editing, multimedia production, post production, weblog and podcast writing and production, broadcast reporting and electronic news gathering.

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

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

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

## ENTRY LEVEL MULTIMEDIA JOURNALIST CAREER PATHWAY CERTIFICATE

<table>
<thead>
<tr>
<th>FALL TERM</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>DMC-100</td>
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<tr>
<td>DMC-104</td>
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</tr>
<tr>
<td>J-216</td>
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<td>or J-230</td>
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<td>J-220</td>
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<table>
<thead>
<tr>
<th>WINTER TERM</th>
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<tbody>
<tr>
<td>COMM-100</td>
<td>3</td>
</tr>
<tr>
<td>or PSY-101</td>
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<td>J-215</td>
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<tr>
<td>WR-121</td>
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<tbody>
<tr>
<td>BA-146</td>
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<td>DMC-190</td>
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<td>J-211</td>
<td>4</td>
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<tr>
<td>J-221</td>
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</table>

Credits required for certificate: 37
Video Production Technician

The Video Production Technician certificate prepares students for entry level positions in the field of multimedia video production. Students attain knowledge and learn skills to seek careers in creative and support professions related to multimedia video production, such as visual and audio editing, multimedia production, post production, sound design, duplication production assistant, camera operators, multimedia artists and animators, titling, and motion graphics.

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

**CAREERS**
Career opportunities include audio and video equipment technicians; broadcast technician; camera operators; film/video editor; media and communication equipment workers; media and communication workers; and multimedia artists and animators.

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

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**Early Childhood Education & Family Studies**

This program provides a foundation in the ten core knowledge categories: Family and Community Systems; Diversity; Health, Safety and Nutrition; Human Growth and Development; Learning Environments and Curriculum; Observation and Assessment; Personal, Professional and Leadership Development; Program Management; Special Needs; and Understanding and Guiding Behavior (The Oregon Registry, 2008).

Students must obtain a First-Aid certificate with infant-toddler CPR by the end of the first year.

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

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

**CAREERS:**
After completing the two-year AAS in Early Childhood Education & Family Studies, students will be prepared to work in a variety of education and family support settings: in-charge teachers in private preschools/ kindergartens or teaching assistants (paraeducators) in public school settings (PK-4th Grade). Additionally, students will be prepared to work as family support personnel (e.g. family advocates, parent practitioners, family life paraprofessionals, etc.) in various education settings or child and family support agencies.

For information contact Dawn Terrill, 503-594-6158 or dawnt@clackamas.edu

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**VIDEO PRODUCTION TECHNICIAN CAREER PATHWAY CERTIFICATE**

<table>
<thead>
<tr>
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<td>COMM-100 Basic Speech Communications</td>
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<td>or PSY-101 Human Relations</td>
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<tr>
<td>DMC-100 Introduction to Media Arts</td>
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<td>DMC-104 Digital Video Editing</td>
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<table>
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<th>CREDITS</th>
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<tbody>
<tr>
<td>DMC-264 Digital Filmmaking</td>
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</tr>
<tr>
<td>DMC-247 Music, Sound &amp; Moviemaking</td>
<td>3</td>
</tr>
<tr>
<td>or MUS-247 Music, Sound &amp; Moviemaking</td>
<td></td>
</tr>
<tr>
<td>WR-121 English Composition</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPRING TERM</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-146 Entertainment Law &amp; New Media</td>
<td>3</td>
</tr>
<tr>
<td>DMC-190 DMC Portfolio Project I</td>
<td>1</td>
</tr>
<tr>
<td>DMC-242 Field Recording &amp; Sound Design for Media</td>
<td>1</td>
</tr>
<tr>
<td>WR-262 Introduction to Screenwriting</td>
<td>4</td>
</tr>
</tbody>
</table>

Credits required for certificate 33

---

Visit Clackamas Community College on the web at www.clackamas.edu

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---
EARLY CHILDHOOD EDUCATION & FAMILY STUDIES CERTIFICATE

SUMMER TERM

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTH-050 or MTH-065</td>
<td></td>
</tr>
<tr>
<td>or MTH-121</td>
<td>3-4</td>
</tr>
<tr>
<td>WR-101 or WR-121</td>
<td></td>
</tr>
<tr>
<td>or English Composition</td>
<td></td>
</tr>
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</table>

FALL TERM

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE-150 Introduction to Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>ECE-173 Preschoolers &amp; Loss: Divorce &amp; Death</td>
<td>1</td>
</tr>
<tr>
<td>ECE-235 Nutrition, Music &amp; Movement</td>
<td>3</td>
</tr>
<tr>
<td>HDF-225 Prenatal, Infant &amp; Toddler Development</td>
<td>3</td>
</tr>
<tr>
<td>HDF-260 Understanding Child Abuse &amp; Neglect</td>
<td>3</td>
</tr>
<tr>
<td>— — PE/Health requirement (see page 53)</td>
<td>2-3</td>
</tr>
</tbody>
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WINTER TERM

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE-121 Observation &amp; Guidance I in ECE Settings</td>
<td>4</td>
</tr>
<tr>
<td>ECE-134 Language &amp; Literacy Development</td>
<td>3</td>
</tr>
<tr>
<td>ECE-209 Theory &amp; Practicum</td>
<td>3</td>
</tr>
<tr>
<td>ECE-240 Lesson &amp; Curriculum Planning</td>
<td>3</td>
</tr>
<tr>
<td>HDF-247 Preschool Child Development</td>
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SPRING TERM

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE-179 The Professional in Early Childhood Education &amp; Family Studies</td>
<td>3</td>
</tr>
<tr>
<td>ECE-239 Helping Children &amp; Families Cope With Stress</td>
<td>3</td>
</tr>
<tr>
<td>ECE-280 Early Childhood Education/CWE</td>
<td>3</td>
</tr>
<tr>
<td>ED-258 Multicultural Education</td>
<td>3</td>
</tr>
<tr>
<td>HDF-140 Contemporary American Families</td>
<td>3</td>
</tr>
</tbody>
</table>

Credits required for certificate 51-54

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

Complete certificate program.

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

FALL TERM

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>ECE-221 Observation &amp; Guidance II in ECE Settings</td>
<td>4</td>
</tr>
<tr>
<td>ED-100 Introduction to Education</td>
<td>3</td>
</tr>
<tr>
<td>ED-150 Creative Activities for Children</td>
<td>3</td>
</tr>
<tr>
<td>ED-270 Practicum II/CWE</td>
<td>4</td>
</tr>
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</table>

WINTER TERM

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE-289 The Project Approach in Early Childhood Education</td>
<td>1</td>
</tr>
<tr>
<td>ED-169 Overview of Students with Special Needs</td>
<td>3</td>
</tr>
<tr>
<td>ED-271 Practicum II/CWE</td>
<td>4</td>
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<tr>
<td>— — General electives (any college-level course)</td>
<td>9</td>
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</table>

SPRING TERM

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE-177 Maximizing the Outdoors in ECE Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>ED-114 Instructional Strategies in Math &amp; Science</td>
<td>3</td>
</tr>
<tr>
<td>ED-246 School, Family &amp; Community Relations</td>
<td>4</td>
</tr>
<tr>
<td>ED-272 Practicum III/CWE</td>
<td>4</td>
</tr>
</tbody>
</table>

Credits required for degree 96-99

Child Development Associate

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

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

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

For information contact Dawn Terrill, 503-594-6158 or dawnt@clackamas.edu

CHILD DEVELOPMENT ASSOCIATE CAREER PATHWAY CERTIFICATE

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

Credits required for certificate 12
**Family Development**

**Career Pathway Certificate**

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

**PROGRAM OUTCOMES**

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

**CAREERS**

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

For information contact Dawn Terrill, 503-594-6158 or dawnt@clackamas.edu

**FAMILY DEVELOPMENT CAREER PATHWAY CERTIFICATE**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDF-130</td>
<td>Introduction to Family Development</td>
</tr>
<tr>
<td>HDF-131</td>
<td>Communication in Family Development</td>
</tr>
<tr>
<td>HDF-132</td>
<td>Self-Care Skills Family Development Workers</td>
</tr>
<tr>
<td>HDF-133</td>
<td>Diversity in Family Development</td>
</tr>
<tr>
<td>HDF-134</td>
<td>Strengths-Based Assessment in Family Life Development</td>
</tr>
<tr>
<td>HDF-135</td>
<td>Setting &amp; Achieving Goals in Family Development</td>
</tr>
<tr>
<td>HDF-136</td>
<td>Community Resources in Family Development</td>
</tr>
<tr>
<td>HDF-137</td>
<td>Home Visiting in Family Development</td>
</tr>
<tr>
<td>HDF-138</td>
<td>Facilitation Skills in Family Development</td>
</tr>
<tr>
<td>HDF-280</td>
<td>Practicum I: Family Studies/CWE</td>
</tr>
<tr>
<td>or ECE-280</td>
<td>Early Childhood Education/CWE</td>
</tr>
</tbody>
</table>

**Credits required for certificate** 12

---

**Electrician Apprenticeship Technologies**

**Certificate**

**Associate of Applied Science Degree**

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

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

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

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

**PROGRAM OUTCOMES**

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

**Electrician**

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

Professional Upgrade

Certificate

Associate of Applied Science Degree

Program course work focuses on a traditional electronics foundation, including a basic electronics series, digital logic series, a troubleshooting series, a physics series and a semiconductor linear circuit series. The degree focuses on electronics and engineering design principles and electronics systems and is taught in a team environment whenever possible.

Specific skill areas for the Electronics Engineering Technology degree include test equipment use, computer use, problem-solving, teamwork, understanding math and electronics fundamentals and writing and oral communication.

PROGRAM OUTCOMES

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

CAREERS

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

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

ELECTRONICS ENGINEERING TECHNOLOGY CERTIFICATE

FIRST TERM

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET-112</td>
<td>Electronic Test Equipment &amp; Soldering</td>
<td>3</td>
</tr>
<tr>
<td>EET-137</td>
<td>Electrical Fundamentals I</td>
<td>4</td>
</tr>
<tr>
<td>MFG-109</td>
<td>Computer Literacy for Technicians</td>
<td>3</td>
</tr>
<tr>
<td>MTH-095</td>
<td>Algebra III</td>
<td>4</td>
</tr>
<tr>
<td>SM-150</td>
<td>Semiconductor Processing I</td>
<td>2</td>
</tr>
<tr>
<td>WR-101*</td>
<td>Communication Skills: Occupational Writing</td>
<td>3</td>
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SECOND TERM

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET-139</td>
<td>Principles of Troubleshooting I</td>
<td>2</td>
</tr>
<tr>
<td>EET-141</td>
<td>Electrical Fundamentals II</td>
<td>4</td>
</tr>
<tr>
<td>EE-157</td>
<td>Digital Logic I</td>
<td>3</td>
</tr>
<tr>
<td>MTH-111</td>
<td>College Algebra</td>
<td>5</td>
</tr>
<tr>
<td>— —</td>
<td>Human Relations requirement (see page 53)</td>
<td>3</td>
</tr>
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</table>

THIRD TERM

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET-127</td>
<td>Semiconductor Circuits I</td>
<td>4</td>
</tr>
<tr>
<td>EET-142</td>
<td>Electrical Fundamentals III</td>
<td>4</td>
</tr>
<tr>
<td>EET-257</td>
<td>Digital Logic II</td>
<td>4</td>
</tr>
<tr>
<td>MTH-112</td>
<td>Trigonometry/Pre-Calculus</td>
<td>5</td>
</tr>
<tr>
<td>SM-280</td>
<td>Electronics &amp; Microelectronics/CWE</td>
<td>2</td>
</tr>
</tbody>
</table>

Credits required for certificate: 55

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

Complete certificate program.

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

FOURTH TERM

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EET-215</td>
<td>Electromechanical Systems I</td>
<td>2</td>
</tr>
<tr>
<td>EET-227</td>
<td>Semiconductor Circuits II</td>
<td>3</td>
</tr>
<tr>
<td>EET-239</td>
<td>Principles of Troubleshooting II</td>
<td>2</td>
</tr>
<tr>
<td>MFG-107</td>
<td>Industrial Safety &amp; First Aid</td>
<td>3</td>
</tr>
<tr>
<td>PH-201**</td>
<td>General Physics</td>
<td>5</td>
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</table>

FIFTH TERM

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<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>EET-250</td>
<td>Linear Circuits</td>
<td>3</td>
</tr>
<tr>
<td>EET-252</td>
<td>Control Systems</td>
<td>3</td>
</tr>
<tr>
<td>EET-254</td>
<td>Introduction to Microcontrollers</td>
<td>4</td>
</tr>
<tr>
<td>MFG-209</td>
<td>Programming &amp; Automation for Manufacturing</td>
<td>3</td>
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<tr>
<td>PH-202**</td>
<td>General Physics</td>
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SIXTH TERM

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<tbody>
<tr>
<td>EET-230</td>
<td>Laser and Fiber Optics</td>
<td>3</td>
</tr>
<tr>
<td>MFG-133</td>
<td>Programmable Logic Controllers</td>
<td>3</td>
</tr>
<tr>
<td>PH-203**</td>
<td>General Physics</td>
<td>5</td>
</tr>
<tr>
<td>SM-280</td>
<td>Electronics &amp; Microelectronics/CWE</td>
<td>2</td>
</tr>
<tr>
<td>— —</td>
<td>PE/Health requirement (see page 53)</td>
<td>3</td>
</tr>
</tbody>
</table>

Credits required for degree: 104

*Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

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

ELECTRONICS ENGINEERING TECHNOLOGY (Oregon Tech transfer courses)

The CCC Manufacturing Technology Department, in partnership with Oregon Tech, offers a number of transferable classes into Oregon Tech’s Electronics Engineering Technology degree program.

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

Associate of Applied Science Degree

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

For information call 503-594-3207.

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

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

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

Emergency Medical Technology

Certificate

Emergency Medical Technicians (EMTs) give immediate care to critically ill or injured people in the prehospital setting and provide transport to hospitals, care facilities and private residences. The ability to work under pressure in challenging environments, think critically to make difficult decisions independently and perform life-saving skills precisely are essential to success in this career. A criminal history background check, immunizations, and drug testing will be required.

EMTs in Oregon must be certified by the state through the Department of Health and Human Services, EMS & Trauma Systems Section (DHS EMS). National certification is available through the National Registry of EMTs (NREMT). Each certification requires approved continuing education classes in emergency care for certification renewal. The CCC Emergency Medical Technology (EMT) certificate program includes the required Oregon and national EMT-Basic certification.

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

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

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

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

EMERGENCY MEDICAL TECHNOLOGY CERTIFICATE

FALL TERM

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI-231</td>
<td>Human Anatomy &amp; Physiology I</td>
<td>4</td>
</tr>
<tr>
<td>COMM-111</td>
<td>Public Speaking</td>
<td>4</td>
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<tr>
<td>EMT-101</td>
<td>EMT Basic-Part I</td>
<td>5</td>
</tr>
<tr>
<td>EMT-105</td>
<td>Introduction to Emergency Medical Services</td>
<td>3</td>
</tr>
<tr>
<td>MTH-065</td>
<td>Algebra II</td>
<td>4</td>
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WINTER TERM

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI-232</td>
<td>Human Anatomy &amp; Physiology II</td>
<td>4</td>
</tr>
<tr>
<td>CS-120</td>
<td>Survey of Computing</td>
<td>4</td>
</tr>
<tr>
<td>EMT-102</td>
<td>EMT Basic-Part II</td>
<td>5</td>
</tr>
<tr>
<td>MA-110</td>
<td>Medical Terminology</td>
<td>3</td>
</tr>
<tr>
<td>WR-121</td>
<td>English Composition</td>
<td>4</td>
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</tbody>
</table>

SPRING TERM

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI-233</td>
<td>Human Anatomy &amp; Physiology III</td>
<td>4</td>
</tr>
<tr>
<td>CJA-203</td>
<td>Crisis Intervention</td>
<td>3</td>
</tr>
<tr>
<td>EMT-107</td>
<td>EMT Rescue</td>
<td>3</td>
</tr>
<tr>
<td>EMT-108</td>
<td>Emergency Response Patient Transportation</td>
<td>2</td>
</tr>
<tr>
<td>EMT-109</td>
<td>Emergency Response Communication/ Documentation</td>
<td>2</td>
</tr>
<tr>
<td>SOC-205</td>
<td>Social Stratification &amp; Social System</td>
<td>4</td>
</tr>
</tbody>
</table>

Credits required for certificate: 58

Current Healthcare Provider level CPR (AHA or ASHI) are required; criminal history background check, proof of immunization, and students will be asked to take a drug test as arranged by the department.
Employment Skills Training

Certificate

The Employment Skills Training Certificate provides a quick entry strategy for learning the knowledge and skills necessary to start or change a career path. The certificate combines college courses with specified hands-on instruction at a local employer to improve employability. The student’s goals and needs are combined with information from employers, the labor market and the college to determine the knowledge and skills needed to obtain employment in a specific occupation. The student receives an individualized Employment Skills Training (EST) plan.

In addition to preparing a person for employment, the individualized EST plan guides the student in gaining more education and training which develops the student’s career path. The program is open entry/open exit, allowing students to begin any term.

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

An EST plan must be developed with and approved by a department's faculty advisor.

All of the college’s collegiate level credit courses are eligible to be included in the certificate. Developmental courses may be included as prerequisites in a plan but cannot be part of the EST certificate.

PROGRAM OUTCOMES
Program outcomes are specific to the student’s goals and may include:

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

CAREERS
Completion of an EST certificate can impact any career. For information please contact Student Academic Support Services Department, 503-594-3475, or http://www.clackamas.edu/Advising/

Energy & Resource Management

Certificate

Associate of Applied Science Degree

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

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

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

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

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

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

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

For information contact: Angie Sandercock, EURM Department Advisor, 503-594-0944 or angies@clackamas.edu or Shelly Tracy, Wilsonville Campus Director, 503-594-0945 or shellyt@clackamas.edu
Energy & Resource Management continued…

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

ENERGY & RESOURCE MANAGEMENT CERTIFICATE:

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SECOND TERM

| ERM-101    | 3       |
| ERM 102    | 3       |
| PSY-101    | 3       |
| WR-122     | 4       |
| or elective|         |

THIRD TERM

| EC-201     | 4       |
| ERM-103    | 3       |
| ERM-180    | 3       |
| — —        | 3-5     |

Credits required for certificate: 45-48

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

Complete certificate program.

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

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FIFTH TERM

| BA-285      | 4       |
| COMM-111    | 3       |
| ERM-202     | 4       |
| — —        | 4-5     |

SIXTH TERM

| BA-124      | Negotiation | 3       |
| BA-205      | Solving Business Communication Problems with Technology | 4 |
| ERM-203     | Energy Applications III. Seminar | 4 |
| — —        | General elective (any course 100 level or above) | 4-5 |

Credits required for degree: 90-96

ENERGY & RESOURCE MANAGEMENT PROGRAM ELECTIVES

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

Utility Workforce Readiness

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

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

PROGRAM REQUIREMENTS

Students who wish to participate in the Utility Workforce Readiness program are welcome to register for the ERM classes once all prerequisites are met. Students are advised of the necessary utility industry standards for math, writing, reading, computer skills and the physical capability required for the successful completion of this program.

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

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

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

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

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

UTILITY WORKFORCE READINESS CAREER PATHWAY CERTIFICATE

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<td>ERM-107 Career Portfolio</td>
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<td>ERM-108A Career Marketing Strategies</td>
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<tr>
<td>ERM-171 Energy Industry Workplace Health Awareness</td>
<td>3</td>
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<td>ERM-172 Energy Industry Safety Development</td>
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<td>HE-261 Community CPR</td>
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SECOND TERM

| ERM-101 Energy & Resource Technology I: Intro | 3 |
| ERM-102 Energy & Resource Technology: Electricity | 3 |
| ERM-173 Energy Industry Performance Development | 6 |
| PSY-101 Human Relations                      | 3 |

Credits required for certificate: 30

Utility Trade Preparation: Lineworker

Certificate

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

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

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

PROGRAM REQUIREMENTS

Students who wish to participate in the Utility Trade Preparation: Lineworker program are welcome to register for the EURM classes once all prerequisites are met. Students are advised of the necessary utility industry standards for math, writing, reading, computer skills and the physical capability required for the successful completion of this program.

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

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

Continued
Utility Trade Preparation: Lineworker continued…

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

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

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

UTILITY TRADE PREPARATION: LINENUMBER CERTIFICATE

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<td>ERM-107</td>
<td>Career Portfolio 3</td>
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<td>ERM-108A</td>
<td>Career Marketing Strategies 2</td>
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<td>ERM-171</td>
<td>Energy Industry Workplace Health Awareness 3</td>
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<td>HE-261</td>
<td>Community CPR 1</td>
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<td>ERM-102</td>
<td>Energy &amp; Resource Technology II: Electricity 3</td>
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<td>Energy Industry Performance Development 6</td>
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<td>PSY-101</td>
<td>Human Relations 3</td>
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<tr>
<td>ERM-174</td>
<td>Groundworker Training 3</td>
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<td>ERM-175</td>
<td>Initial Pole Climbing 4</td>
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<td>MFG-130</td>
<td>Basic Electricity I 3</td>
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<td>WR-101</td>
<td>Communication Skills: Occupational Writing 3-4</td>
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<tr>
<td>or WR-121</td>
<td>English Composition 4</td>
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<tr>
<td>MTH-065</td>
<td>Algebra II (or higher level math) 3-4</td>
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</table>

Credits required for certificate 47-48

Fire Science (Wildland)

Certificate

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

Clackamas Community College is a certified training site recognized by the Pacific Northwest Wildfire Coordinating Group (PNWCG), the Oregon Department of Forestry, and National Forest Service. Program instructors are National Wildfire Coordinating Group (NWCG) certified and offer 15-30 years of wildland firefighting experience. Many of the courses carry NWCG certification as well as college credit.

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

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

For information contact Joe Crawford, 503-594-3620 or jcrawford@clackamas.edu; Tom Laugle, 503-594-3066 or toml@clackamas.edu or visit http://depts.clackamas.edu/firescience/

FIRE SCIENCE (WILDLAND) CERTIFICATE

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<td>Basic Forest Management 3</td>
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<td>FRP-102</td>
<td>Basic Forest Management Lab 1</td>
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<td>FRP-130</td>
<td>Introduction to Wildland Firefighting (S-130/S-190) 3</td>
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<td>FRP-243</td>
<td>Survivor I: Map, Compass, GPS 2</td>
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<tr>
<td>HD-120</td>
<td>New Student College Success 1</td>
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<td>WR-121</td>
<td>English Composition 3</td>
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<td>or WR-101</td>
<td>Communication Skills: Occupational Writing 3-4</td>
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<td>MTH-050</td>
<td>Technical Mathematics I 2</td>
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<td>ESH-100</td>
<td>Environmental Regulations 3</td>
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<tr>
<td>FRP-211</td>
<td>Portable Pumps &amp; Water Use (S-211) 1</td>
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<td>FRP-216</td>
<td>Driving for the Fire Service (S-216) 2</td>
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<td>FRP-244</td>
<td>Survivor II: Wilderness 2</td>
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<td>FRP-246</td>
<td>Survivor IV: Wilderness First Aid 2</td>
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<td>or MTH-065</td>
<td>Algebra II 3</td>
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Credits required for certificate (see page 53) (Recommended: PSY-101) 3
Wilderness Survival and Leadership

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

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

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

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

WILDERNESS SURVIVAL AND LEADERSHIP CAREER PATHWAY CERTIFICATE

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

Credits required for certificate 12-13

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

Geographic Information Systems (GIS) Technology

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

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

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

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

GEOGRAPHIC INFORMATION SYSTEMS (GIS) TECHNOLOGY CERTIFICATE

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

Continued
Geographic Information Systems (GIS) Technology continued…

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<td>— — Human Relations requirement (see page 53)</td>
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Credits required for certificate: 48

TECHNICAL ELECTIVES

Any course with a GIS or CDT prefix.

Gerontology

Certificate

The Gerontology program offers a one-year certificate on the study of aging, which is designed for individuals who work with older people. The one-year certificate can provide significant coursework towards the two-year Associate of Applied Science degree in Human Services.

PROGRAM REQUIREMENTS

Current CPR certificate is required.

PROGRAM OUTCOMES

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

CAREERS

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

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

GERONTOLOGY CERTIFICATE

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<td>GRN-184 Ageing &amp; the Individual</td>
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<td>HS-154 Community Resources</td>
<td>3</td>
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<td>HS-156 Interviewing Theory and Techniques</td>
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<td>GRN-183 Death &amp; Dying</td>
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<td>GRN-280 Gerontology/CWE</td>
<td>3</td>
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<tr>
<td>HS-170 Preparation for Field Experience in Human Services</td>
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<td>MTH-050 Technical Mathematics I or MTH-065 Algebra II</td>
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Credits required for certificate: 45-51

GERONTOLOGY PROGRAM ELECTIVES

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<td>CS-120 Survey of Computing</td>
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<td>ED-258 Multicultural Education</td>
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<td>FN-110 Personal Nutrition</td>
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<td>HE-152 Body and Drugs II</td>
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<td>HS-100 Introduction to Human Services</td>
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<td>HS-103 Ethics for Human Services Workers</td>
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<td>HS-130 Introduction to Hospice</td>
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<td>HS-165 Activity Director for Long Term Care</td>
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<td>HS-211 HIV, TB &amp; Infectious Diseases</td>
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<td>HS-260 Victim Advocacy and Assistance</td>
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<tr>
<td>HS-267 Intervention Strategies Working with Families</td>
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<td>NUR-100 Nursing Assistant I</td>
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<td>PSY-219 Abnormal Psychology</td>
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<tr>
<td>PSY-221 Introduction to Counseling</td>
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Other electives may be approved by the Gerontology program advisor.
Horticulture

Certificate

Associate of Applied Science Degree

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

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

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

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

PROGRAM OUTCOMES

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

Students are eligible to sit for the Oregon Certified Nursery Professional Exam. Students completing the Horticulture Associate of Applied Science (AAS) Degree with a 2.5 GPA or higher, are eligible to take the Oregon Landscape Contractors License Exam.

CAREERS

Career opportunities include nursery and garden center manager and associate, nursery production, greenhouse grower, organic food production, supply and equipment sales, landscape design, installation and maintenance worker, parks department personnel and groundskeeper.

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

OREGON STATE UNIVERSITY TRANSFER AGREEMENT

Some horticulture classes transfer to Oregon State University as part of a bachelor’s degree. Horticulture students planning to continue their studies at a four-year college should consult the Horticulture advisor to obtain the most recent transfer information.

OSU TRANSFER COURSES

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<thead>
<tr>
<th>COURSE</th>
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<tbody>
<tr>
<td>HOR-215</td>
<td>Herbaceous Perennials 3</td>
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<tr>
<td>HOR-226</td>
<td>Plant Identification/Fall 3</td>
</tr>
<tr>
<td>HOR-227</td>
<td>Plant Identification/Winter 3</td>
</tr>
<tr>
<td>HOR-228</td>
<td>Plant Identification/Spring 3</td>
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HORTICULTURE CERTIFICATE

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<td>HOR-111</td>
<td>Horticulture Practicum/Fall 6</td>
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<td>HOR-122</td>
<td>Greenhouse Crops-Potted Plants 3</td>
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<tr>
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<td>Landscape Installation 3</td>
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<td>Plant Identification/Fall 3</td>
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<td>or MTH-065 Algebra II (or higher level math) 3-5</td>
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<td>Plant Propagation Theory 3</td>
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<td>Pesticide Selection &amp; Use 3</td>
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<td>Horticulture Practicum/Winter 6</td>
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<td>HOR-222</td>
<td>Horticultural Computer Applications 2</td>
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SPRING TERM

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<td>Human Relations in Business 3-4</td>
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<td>or COMM-100 Basic Speech Communication 3-4</td>
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<td>HOR-140</td>
<td>Soils &amp; Fertilizers 3</td>
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<td>HOR-142</td>
<td>Greenhouse Crops-Bedding Plants 3</td>
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<tr>
<td>or HOR-145 Turf Installation &amp; Maintenance 3</td>
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<tr>
<td>HOR-143</td>
<td>Horticulture Practicum/Spring 6</td>
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SUMMER TERM

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<td>or WR-121 English Composition 3-4</td>
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Credits required for certificate 58-62

HORTICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

FALL TERM

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<td>or HOR-224 Landscape Installation 3</td>
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<td>HOR-226</td>
<td>Plant Identification/Fall 3</td>
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<td>MTH-050</td>
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<td>or MTH-065 Algebra II (or higher level of math) 3-5</td>
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Continued
Horticulture continued...

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

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

SUMMER TERM
HOR-281  Horticulture/CWE  3
or HOR-280  Horticulture/CWE and HOR-282  Horticulture/CWE  6

HORTICULTURE ASSOCIATE OF APPLIED SCIENCE DEGREE:
2ND YEAR

FALL TERM  CREDITS
SPN-101  First Year Spanish  4
WR-101  Communication Skills: Occupational Writing  3-4
or WR-121  English Composition  3-4
or HOR-281  Horticulture/CWE  6

WINTER TERM  CREDITS
BA-250  Small Business Management  3
HOR-230  Equipment Operation & Maintenance  3
or HOR-282  Horticulture/CWE  6

SPRING TERM  CREDITS
BA-285  Human Relations in Business  3-4
or COMM-100  Basic Speech Communication  3-4
HE-252  First Aid/CPR  3
or HOR-281  Horticulture/CWE  6

Credits required for degree  92-96

HORTICULTURE PROGRAM ELECTIVES

COURSE  CREDITS
HOR-114  Garden Design  1
HOR-122  Greenhouse Crops—Potted Plants  3
HOR-123  Landscape Maintenance  3
HOR-124  Food Harvest  3
HOR-125  Food Production in the Willamette Valley  3
HOR-130  Plant Propagation Theory  3
HOR-131  Tree & Shrub Pruning/Winter  3
HOR-134  Herb Growing & Gardening  1
HOR-135  Propagation of Edible Plants  3
HOR-142  Greenhouse Crops—Bedding Plants  3
HOR-144  Basic Pruning  1
HOR-145  Turf Installation & Maintenance  3
HOR-146  Fruit & Berry Growing  3
HOR-147  Marketing Water Efficient Landscaping  1
HOR-148  Farm Equipment  3
HOR-211  Native Plant Identification  1
HOR-212  Flower Arranger's Garden/Fall  3
HOR-213  Computer-Aided Landscape Design  3
HOR-215  Herbaceous Perennial Plants  3
HOR-216  Integrated Pest Management  2
HOR-220  Plant Propagation/Fall  3
HOR-224  Landscape Installation  3
HOR-225  Principles of Arboriculture  3
HOR-229  Basic Landscape Design  3
HOR-231  Irrigation & Drainage Design  3
HOR-232  Commercial Floral Design  3
HOR-234  Intermediate Landscape Design  3
HOR-235  Weed Identification  2
HOR-236  Insect Identification  2
HOR-237  Disease Identification  2
HOR-239  Tree Climber Training  2
HOR-240  Irrigation & Drainage Practices  3
HOR-241  Nursery Management  3
HOR-242  Plant Propagation/Spring  3
HOR-244  Environmental Landscape Design  3
HOR-246  Organic Farming & Gardening  3
HOR-247  Hardscape Installation  3
HOR-248  Flower Arranger's Garden/Spring  3
HOR-250  Western Herbs  2
HOR-251  Herbal Products  1
HOR-252  Kitchen Herbs  1
HOR-280  Horticulture/CWE  3
HOR-281  Horticulture/CWE  6
HOR-282  Horticulture/CWE  3

Irrigation Technician

Career Pathway Certificate

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

Program Outcomes

Successful completion of this program should provide students with the necessary skills to design, install, maintain, troubleshoot, repair and program irrigation systems.

Careers

Career opportunities include working as an Irrigation Technician in nurseries, greenhouses, parks, golf courses, landscapes or production agriculture.

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

Irrigation Technician Career Pathway Certificate

Winter Term

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

Spring Term

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

Credits required for certificate  16
Plant Health Care

Career Pathway Certificate

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

Program Outcomes

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

Careers

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

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

Plant Health Care Career Pathway Certificate

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<td>HOR-236</td>
<td>Insect Identification 2</td>
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<td>Integrated Pest Management 2</td>
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<td>HOR-237</td>
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<tr>
<td>or HOR-280</td>
<td>Horticulture/CWE and HOR-282 Horticulture/CWE</td>
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</table>

Credits required for certificate 17

Human Resource Management

Certificate

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

Program Outcomes

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

Careers

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

For information contact Bill Waters, 503-594-3079 or billw@clackamas.edu

Human Resource Management Certificate

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<thead>
<tr>
<th>FALL TERM</th>
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<tbody>
<tr>
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<td>BA-211</td>
<td>Financial Accounting I  4</td>
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<td>BA-224</td>
<td>Human Resource Management 4</td>
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<tr>
<td>BA-226</td>
<td>Business Law I  4</td>
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<td>WR-121</td>
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<td>Payroll Accounting  3</td>
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<td>BA-206</td>
<td>Management Fundamentals 4</td>
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<td>BA-208</td>
<td>Employee Labor Relations 4</td>
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<td>BA-285</td>
<td>Human Relations in Business 4</td>
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<td>BA-104* or MTH-065 Algebra II</td>
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<td>BA-131</td>
<td>Introduction to Business Computing  4</td>
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<td>Employment Law  4</td>
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<td>BA-254</td>
<td>Basic Compensation and Benefits 4</td>
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<td>BA-280</td>
<td>Business/CWE  3</td>
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</table>

Credits required for certificate 53-54

* For this certificate, BA-104 meets the Related Instruction Computation requirement.
Human Resource Management Essentials

Career Pathway Certificate

This program is designed for students who either are currently employed in or desire to be employed in Human Resource Management (HRM), and who lack formal education in Human Resource Management laws and processes. The classes provided in this pathway certificate form the foundation for work as a Human Resource Manager or for future education in the discipline.

PROGRAM OUTCOMES

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

CAREERS

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

For more information contact Bill Waters, 503-594-3079 or billw@clackamas.edu

HUMAN RESOURCE MANAGEMENT ESSENTIALS
CAREER PATHWAY CERTIFICATE

<table>
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<td>Credits required for certificate</td>
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Human Services Generalist

Certificate

Associate of Applied Science Degree

Both the one-year certificate and the two-year AAS in Human Services Generalist degree offer training for both entry-level positions in diverse social services agencies. The degree combines academic course work with 12 credits of supervised field experience. In addition to general course work in human services, students may select a variety of approved elective certificates/courses to focus on different concentration areas. Students must have a current CPR card at time of graduation.

PROGRAM OUTCOMES

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

CAREERS

Opportunities for employment include positions such as case managers and assistants, resource specialists, family advocates, client advocates, intake workers, family assistance workers and volunteer coordinators.

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

HUMAN SERVICES GENERALIST CERTIFICATE

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<tr>
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<td>— Social Stratification &amp; Social Systems</td>
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HUMAN SERVICES GENERALIST
ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

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

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WINTER TERM
HS-136 Interviewing Theory & Techniques 3
HS-281 Human Services Generalist II: CWE/Practicum 4
PSY-221 Introduction to Counseling 4
— — Human Services Generalist program electives 4

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

Credits required for degree 90-92

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

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

Alcohol & Drug Counselor

The Alcohol & Drug Counselor Career Pathway Certificate prepares students to sit for the certification examination offered by the Addiction Counselor Certification Board. The coursework is appropriate both for new students to the field, and those wishing to update their skills or seek additional certification. The certificate provides the 150 educational hours required by the certification board. Students can also opt to add a CWE component that will partially fulfill the 1000 required practicum hours. Qualifying for the CADC I certificate is a stepping stone for students who want to work now, but may also be thinking of pursuing further education in the future. More information about certification can be found at www.accbo.com

CAREERS
This program prepares students to work in a variety of human service settings, including both inpatient and outpatient treatment programs, programs for the homeless, and a variety of community agencies.

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

ALCOHOL & DRUG COUNSELOR CAREER PATHWAY CERTIFICATE

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<tr>
<td>HS-156 Interviewing Theory and Techniques</td>
<td>3</td>
</tr>
<tr>
<td>HS-211 HIV, TB, and Infectious Diseases</td>
<td>1</td>
</tr>
<tr>
<td>HS-216 Group Counseling Skills</td>
<td>3</td>
</tr>
</tbody>
</table>

Credits required for certificate 15

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

Career Development Facilitator

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

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

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

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

CAREER DEVELOPMENT FACILITATOR CAREER PATHWAY CERTIFICATE

<table>
<thead>
<tr>
<th>FIRST TERM</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS-217 Helping Skills and Diverse Populations</td>
<td>2</td>
</tr>
<tr>
<td>HS-218 Career Development Models and Assessments</td>
<td>2</td>
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</tbody>
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<table>
<thead>
<tr>
<th>SECOND TERM</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS-219 Training Clients/Peers and Employability Skills</td>
<td>2</td>
</tr>
<tr>
<td>HS-220 Labor Market Information and Technology in Career Planning</td>
<td>2</td>
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</table>

Continued
Career Development Facilitator continued…

CAREER DEVELOPMENT FACILITATOR PROGRAM ELECTIVES

<table>
<thead>
<tr>
<th>COURSE</th>
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<tbody>
<tr>
<td>HS-154 Community Resources</td>
<td>3</td>
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<tr>
<td>HS-260 Victim Advocacy &amp; Assistance</td>
<td>4</td>
</tr>
<tr>
<td>HS-280 Human Services Generalist I/CWE</td>
<td>4</td>
</tr>
</tbody>
</table>

CAREERS

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

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

OREGON STATE UNIVERSITY TRANSFER AGREEMENT

Some horticulture classes transfer to Oregon State University as part of a bachelor's degree. Landscape students planning to continue their studies at a four-year college should consult the Horticulture advisor to obtain the most recent transfer information.

LANDSCAPE ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

<table>
<thead>
<tr>
<th>FALL TERM</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOR-111 Horticulture Practicum/Fall</td>
<td>6</td>
</tr>
<tr>
<td>HOR-224 Landscape Installation</td>
<td>3</td>
</tr>
<tr>
<td>HOR-226 Plant Identification/Fall</td>
<td>3</td>
</tr>
<tr>
<td>MTH-050 Technical Mathematics I</td>
<td>3-5</td>
</tr>
<tr>
<td>or MTH-065 Algebra II (or higher level of math)</td>
<td>3-5</td>
</tr>
<tr>
<td>WR-101 Communication Skills: Occupational Writing or WR-121 English Composition</td>
<td>3-4</td>
</tr>
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<thead>
<tr>
<th>WINTER TERM</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOR-131 Tree &amp; Shrub Pruning/Winter</td>
<td>3</td>
</tr>
<tr>
<td>HOR-132 Pesticide Selection &amp; Use</td>
<td>3</td>
</tr>
<tr>
<td>HOR-133 Horticulture Practicum/Winter</td>
<td>6</td>
</tr>
<tr>
<td>HOR-222 Horticultural Computer Applications</td>
<td>2</td>
</tr>
<tr>
<td>HOR-227 Plant Identification/Winter</td>
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<table>
<thead>
<tr>
<th>SPRING TERM</th>
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<tbody>
<tr>
<td>BA-285 Human Relations in Business or COMM-100 Basic Speech Communication</td>
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<tr>
<td>HOR-140 Soils &amp; Fertilizers</td>
<td>3</td>
</tr>
<tr>
<td>HOR-143 Horticulture Practicum/Spring</td>
<td>6</td>
</tr>
<tr>
<td>HOR-145 Turf Installation &amp; Maintenance</td>
<td>3</td>
</tr>
<tr>
<td>HOR-228 Plant Identification/Spring</td>
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<table>
<thead>
<tr>
<th>SUMMER TERM</th>
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<tbody>
<tr>
<td>HOR-239 Tree Climber Training</td>
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<tr>
<td>HOR-281 Horticulture/CWE or HOR-282 Horticulture/CWE</td>
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<table>
<thead>
<tr>
<th>LANDSCAPE ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>FALL TERM</td>
<td>CREDITS</td>
</tr>
<tr>
<td>HOR-123 Landscape Maintenance or HOR-225 Principles of Arboriculture</td>
<td>3</td>
</tr>
<tr>
<td>HOR-229 Basic Landscape Design</td>
<td>3</td>
</tr>
<tr>
<td>HOR-235 Weed Identification or HOR-236 Insect Identification</td>
<td>2</td>
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<tr>
<td>SPN-101 First Year Spanish</td>
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<table>
<thead>
<tr>
<th>WINTER TERM</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>BA-250 Small Business Management</td>
<td>3</td>
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<tr>
<td>HOR-230 Equipment Operation &amp; Maintenance</td>
<td>3</td>
</tr>
<tr>
<td>HOR-231 Irrigation &amp; Drainage Design</td>
<td>3</td>
</tr>
<tr>
<td>HOR-234 Intermediate Landscape Design</td>
<td>3</td>
</tr>
<tr>
<td>HOR-237 Disease Identification</td>
<td>2</td>
</tr>
</tbody>
</table>

Landscape

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, arboriculture 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 Landscape Network (PLANET). This accreditation provides students with enhanced opportunities to follow national PLANET landscaping standards, to network with landscape industry professionals, to extend their knowledge about landscape standards and practices and to attend the National PLANET Student Career Days each year.

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

PROGRAM OUTCOMES

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

Students completing the Landscape Associate of Applied Science (AAS) Degree with a 2.5 GPA or higher are eligible to take the Oregon Landscape Contractors License Exam.
The Landscape Practices certificate is designed for students whose concentration is within the landscape career path. Students participate in a laboratory-style practicum class which develops a full season's experience in growing and caring for plants. Students are involved in the day-to-day operation and maintenance of CCC's extensive greenhouse and landscape facilities, arboretum and turf management areas, including training with tools of the trade: mowers, rototillers, tractors, pesticide applicators, greenhouse equipment and pruning tools. Students also cultivate CCC's award winning, All-American Selections Garden and landscape areas on the CCC campus.

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

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

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

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

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

OREGON STATE UNIVERSITY TRANSFER AGREEMENT
Some horticulture classes transfer to Oregon State University as part of a bachelor's degree. Landscape students planning to continue their studies at a four-year college should consult the Horticulture advisor to obtain the most recent transfer information.

LANDSCAPE PRACTICES CERTIFICATE

FALL TERM
HOR-224 Landscape Installation 3
HOR-225 Principles of Arboriculture or HOR-226 Plant Identification/Fall 3
HOR-229 Basic Landscape Design or HOR-123 Landscape Maintenance 3
HOR-235 Weed Identification 2
HOR-236 Insect Identification 2

WINTER TERM
BA-250 Small Business Management 3
HOR-132 Pesticide Selection & Use 3
HOR-231 Irrigation & Drainage Design 3
HOR-234 Intermediate Landscape Design or HOR-230 Equipment Operation & Maintenance 3
HOR-227 Plant Identification/Winter or HOR-239* Tree Climber Training 2-3

SPRING TERM
HOR-140 Soils & Fertilizers 3
HOR-145 Turf Installation & Maintenance 3
HOR-247 Hardscape Installation 3
HOR-228 Plant Identification/Spring 3
HOR-280 Horticulture/CWE 3

Credits required for certificate 42-43

* Note: This course is only offered Summer term.

Manufacturing Technology

Professional Upgrade

Certificate

Associate of Applied Science Degree

Course work in manufacturing technology prepares students for careers in high-tech manufacturing by producing products to exacting industrial standards utilizing current manual and computer-aided machine tool technology. Many classes are taught in a flexible, open-lab format and students may enter the program any term. Individualized daytime and evening instruction is provided in the operation of machine tools such as: lathes, mills, surface and cylindrical grinders and common machine shop equipment. Included in the degree program is the study of computer numerical control (CNC) programming and machining for milling, turning and electrical discharge machining (EDM), as well as courses in computer-aided manufacturing (CAM) utilizing current industrial CAD/CAM software. Quality control is stressed while students are taught a wide range of measuring.
Manufacturing Technology continued...

and inspection techniques. Other topics include courses offered in welding, materials science and basic electricity. Many students enroll in these courses to upgrade existing job skills and several of our courses satisfy the continuing education unit (CEU) requirements of local apprenticeships and trade organizations.

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

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

CNC MACHINING TECHNICIAN

SHORT TERM TRAINING
For students who need a quick-entry strategy into the work force, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information. A short-term training certificate is available.

For information contact Mike Mattson, Department Chair, 503-594-3322 or mattsomm@clackamas.edu; or the Manufacturing Department, 503-594-3318.

MANUFACTURING ENGINEERING TECHNOLOGY
(Oregon Tech transfer courses)
The Manufacturing Technology Department, in partnership with Oregon Tech, offers a significant number of transferable classes into Oregon Tech’s Manufacturing Engineering Technology degree program. For information contact the Manufacturing Department, 503-594-3318.

CAD/CAM TECHNOLOGY DEGREE
See AAS degree program on page 68.

MANUFACTURING TECHNOLOGY CERTIFICATE

<table>
<thead>
<tr>
<th>FIRST TERM</th>
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<tbody>
<tr>
<td>MFG-104 Print Reading</td>
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<tr>
<td>MFG-107 Industrial Safety</td>
<td>3</td>
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<tr>
<td>&amp; First Aid</td>
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<tr>
<td>MFG-111 Machine Tool</td>
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<tr>
<td>Fundamentals I</td>
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<tr>
<td>MTH-050* Technical</td>
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<tr>
<td>Mathematics I</td>
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<tr>
<td>MFG-105 Dimensional</td>
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<tr>
<td>Inspection</td>
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<tr>
<td>MFG-109 Computer Literacy</td>
<td>3</td>
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<tr>
<td>for Technicians</td>
<td></td>
</tr>
<tr>
<td>or MFG-209 Programming</td>
<td></td>
</tr>
<tr>
<td>and Automation for</td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
</tr>
<tr>
<td>MFG-112 Machine Tool</td>
<td>9</td>
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<tr>
<td>Fundamentals II</td>
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<tr>
<td>MTH-080 Technical</td>
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<tr>
<td>Mathematics II</td>
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THIRD TERM

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
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<tr>
<td>MFG-106</td>
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<tr>
<td>Applied Geometric</td>
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<tr>
<td>Dimensioning &amp; Tolerancing</td>
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<tr>
<td>for Manufacturing</td>
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</tr>
<tr>
<td>MFG-113** Machine Tool</td>
<td>6</td>
</tr>
<tr>
<td>Fundamentals III</td>
<td></td>
</tr>
<tr>
<td>MFG-280</td>
<td>2</td>
</tr>
<tr>
<td>Manufacturing Technology/CWE</td>
<td></td>
</tr>
<tr>
<td>WR-101*</td>
<td>3</td>
</tr>
<tr>
<td>Communication Skills</td>
<td></td>
</tr>
<tr>
<td>Occupational Writing</td>
<td></td>
</tr>
<tr>
<td>— — Human Relations</td>
<td>3</td>
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<tr>
<td>requirement (see page 53)</td>
<td></td>
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</tbody>
</table>

Credits required for certificate 51

MANUFACTURING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR
Complete certificate program.

MANUFACTURING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

<table>
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<tr>
<td>MFG-201</td>
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<tr>
<td>CNC I: Setup &amp; Operation</td>
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<tr>
<td>MFG-204</td>
<td>4</td>
</tr>
<tr>
<td>Computer-Aided Manufacturing I</td>
<td></td>
</tr>
<tr>
<td>MFG-211</td>
<td>6</td>
</tr>
<tr>
<td>Machine Tool Fundamentals IV</td>
<td></td>
</tr>
<tr>
<td>— — Manufacturing</td>
<td>3</td>
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<tr>
<td>Technology program electives</td>
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</table>

FIFTH TERM

<table>
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<tbody>
<tr>
<td>MFG-202</td>
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<tr>
<td>CNC II: Programming &amp;</td>
<td></td>
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<tr>
<td>Operation</td>
<td></td>
</tr>
<tr>
<td>MFG-205</td>
<td>4</td>
</tr>
<tr>
<td>Computer-Aided Manufacturing I</td>
<td></td>
</tr>
<tr>
<td>MFG-211</td>
<td>3</td>
</tr>
<tr>
<td>Materials Science</td>
<td></td>
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<tr>
<td>MFG-280</td>
<td>2</td>
</tr>
<tr>
<td>Manufacturing Technology/CWE</td>
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<tr>
<td>— — General elective</td>
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<tr>
<td>(any course 100 level or above)</td>
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</table>

Credits required for degree 96

MANUFACTURING TECHNOLOGY PROGRAM ELECTIVES
Complete three or more credits from the following:

<table>
<thead>
<tr>
<th>COURSE</th>
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<tbody>
<tr>
<td>CDT-102</td>
<td>1-3</td>
</tr>
<tr>
<td>Sketching &amp; Problem</td>
<td></td>
</tr>
<tr>
<td>Solving</td>
<td></td>
</tr>
<tr>
<td>CDT-103</td>
<td>4</td>
</tr>
<tr>
<td>Computer-Aided Drafting</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td></td>
</tr>
<tr>
<td>CDT-108A</td>
<td>3</td>
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<tr>
<td>Introduction to Solid</td>
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<tr>
<td>Modeling</td>
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<td>CDT-223</td>
<td>3</td>
</tr>
<tr>
<td>Inventor Fundamentals</td>
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<tr>
<td>CDT-225</td>
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<tr>
<td>Advanced SolidWorks</td>
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<td>MET-170</td>
<td>3</td>
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<tr>
<td>Introduction to Manufacturing Process</td>
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<td>MFG-113</td>
<td>3</td>
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<tr>
<td>Machine Tool Fundamentals III</td>
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<td>MFG-130</td>
<td>3</td>
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<tr>
<td>Basic Electricity</td>
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<td>I</td>
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<td>WLD-150</td>
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<tr>
<td>Welding Processes</td>
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<tr>
<td>— — Other technical</td>
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<tr>
<td>courses with departmental approval</td>
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</tbody>
</table>

*Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

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

The CNC Machining Technician program at Clackamas provides the training necessary for employment within the advanced manufacturing field. The program is arranged with core CNC competencies in mind while allowing the student flexibility to take other relevant manufacturing courses. Course work covers blueprint reading, technical mathematics, safety, and manual and CNC machining. The program is fully transferable to the one-year Manufacturing Technology Certificate or two-year Manufacturing Technology AAS Degree.

This certificate is part of the manufacturing career pathway preparing students for a wide variety of manufacturing careers and opportunities to continue at a four-year institution.

PROGRAM OUTCOMES
Upon successful completion of the program, students will have learned the skills necessary to obtain entry-level employment in the manufacturing field as a CNC operator.

CAREERS
Career opportunities may include entry-level CNC operator, machinist or general manufacturing technician.

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

CNC MACHINING TECHNICIAN CAREER PATHWAY CERTIFICATE

<table>
<thead>
<tr>
<th>COURSE</th>
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<tr>
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<td>MFG-107</td>
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<td>MFG-111</td>
<td>9</td>
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<tr>
<td>MFG-201</td>
<td>4</td>
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<tr>
<td>MTH-050</td>
<td>3</td>
</tr>
<tr>
<td>CNC Machining Technician program elective</td>
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</table>

Credits required for certificate: 23-25

CNC MACHINING TECHNICIAN PROGRAM ELECTIVES

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<td>MFG-112</td>
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<td>MFG-202</td>
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<td>MFG-204</td>
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</tr>
<tr>
<td>WLD-150</td>
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</table>

Marketing & Management

Associate of Applied Science Degree

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

PROGRAM OUTCOMES
Upon successful completion of this program, students will be able to demonstrate the skills necessary for entry-level employment in areas such as retail and wholesale sales, marketing management, market research and advertising and distribution. Students will prepare effective presentations, develop an effective marketing plan, prepare winning sales presentations and prepare themselves for upward mobility in the marketing and management fields.

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

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

MARKETING & MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

<table>
<thead>
<tr>
<th>FALL TERM</th>
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<tbody>
<tr>
<td>BA-101 Introduction to Business</td>
<td>4</td>
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<tr>
<td>BA-104* Business Math</td>
<td>3</td>
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<tr>
<td>BA-224 Human Resource Management</td>
<td>4</td>
</tr>
<tr>
<td>WR-121 English Composition</td>
<td>4</td>
</tr>
</tbody>
</table>

WINTER TERM

| BA-131 Introduction to Business Computing | 4 |
| BA-156 Business Forecasting              | 3 |
| BA-223 Principles of Marketing           | 4 |
| BA-285 Human Relations in Business       | 4 |

SPRING TERM

| BA-205 Solving Communication Problems with Technology | 4 |
| BA-211 Financial Accounting I              | 4 |
| BA-226 Business Law I                       | 4 |
| BA-238 Sales                                | 4 |

MARKETING & MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

<table>
<thead>
<tr>
<th>FALL TERM</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-206 Management Fundamentals</td>
<td>4</td>
</tr>
<tr>
<td>BA-212 Financial Accounting II</td>
<td>4</td>
</tr>
<tr>
<td>BA-239 Advertising</td>
<td>4</td>
</tr>
<tr>
<td>BA-249 Retailing</td>
<td>3</td>
</tr>
<tr>
<td>PE/Health requirement</td>
<td>1</td>
</tr>
</tbody>
</table>
Marketing & Management continued…

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

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

Credits required for degree 96-97  
* For this degree, BA-104 meets the Related Instruction Computation requirement.

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

Marketing

[Certificate]

This certificate focuses on technical marketing skills in areas such as need identification, product and service development, determining price, communicating information to potential customers, and distributing the products to customers.

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

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

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

MARKETING CERTIFICATE

WINTER TERM
BA-101* Introduction to Business 4  
BA-131 Introduction to Business Computing 4  
BA-224 Human Resource Management 4  
WR-121 English Composition 4

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

SPRING TERM
BA-205* Solving Communication Problems with Technology 4  
BA-211 Financial Accounting I 4  
BA-226 Business Law I 4  
BA-238 Sales 4  
BA-280 Business/CWE 3

Credits required for certificate 49

Medical Assistant

[Certificate]

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

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

Prior to application the MA student candidate must:

• Meet the appropriate placement score in math either by taking the placement exam or by providing proof of a comparable assessment. CCC placements should be dated no earlier than 2003 or previous college coursework as documented by official college/university transcripts. To be eligible to apply, students must show placement by passing MTH-020 or placement in MTH-050/060.

• Have successfully completed MA-110 and WR-101 or WR-121, and COMM-100 or COMM-111 or COMM-218. Curriculum prerequisites are subject to change year by year. In order to assure potential students have the most current information, please review the department website.

• During the multi-phase application process the applicant will be asked to provide:

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

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

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

For continuing education opportunities for healthcare providers see Healthcare Professional Development (HPD) in the course description section on page 178.
For more information, contact health-sciences-questions@clackamas.edu

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

MEDICAL ASSISTANT CERTIFICATE PREREQUISITE TO APPLICATION
The following prerequisites must be completed prior to the start of the student’s cohort. Curriculum prerequisites and requirements may change yearly. To see prerequisites or requirements for the 2013-2014 cohort year, please review the department website.

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA-110</td>
<td>3</td>
</tr>
<tr>
<td>WR-101 or WR-121</td>
<td>4-4</td>
</tr>
</tbody>
</table>

ANY ONE OF THE FOLLOWING:

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>COMM-100</td>
<td>3</td>
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<tr>
<td>COMM-111</td>
<td>4</td>
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<tr>
<td>COMM-218</td>
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</table>

MEDICAL ASSISTANT CERTIFICATE

<table>
<thead>
<tr>
<th>FALL TERM</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>BI-120*</td>
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<tr>
<td>CS-120</td>
<td>4</td>
</tr>
<tr>
<td>MA-112</td>
<td>4</td>
</tr>
<tr>
<td>MA-145</td>
<td>3</td>
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<tr>
<td>PSY-101</td>
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SECOND TERM

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>MA-116</td>
<td>4</td>
</tr>
<tr>
<td>MA-117</td>
<td>2</td>
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<tr>
<td>MA-118</td>
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<tr>
<td>MTH-054</td>
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THIRD TERM

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA-115</td>
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<tr>
<td>MA-121</td>
<td>2</td>
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<tr>
<td>PSY-215</td>
<td>4</td>
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</table>

(WEEKS 6-11)

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA-119**</td>
<td>9</td>
</tr>
</tbody>
</table>

Credits required for certificate: 56-58

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

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

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

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

Microelectronics Systems Technology

Professional Upgrade

Certificate

Associate of Applied Science Degree

This program prepares students for entry into the microelectronics and semiconductor industries. Course work focuses on wafer manufacturing, integrated circuit fabrication, component manufacturing, microelectronic assembly and equipment maintenance. Specific skill areas include: silicon materials fabrication, silicon manufacturing, semiconductor processing, microcontamination and particle control, troubleshooting of equipment and systems, microlithography, ion implantation, etch and chemical vapor deposition.

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

Continued
Microelectronics Systems Technology continued…

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

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

MICROELECTRONICS SYSTEMS TECHNOLOGY CERTIFICATE

FIRST TERM  CREDITS
EET-112  Electronic Test Equipment & Soldering  3
EET-137  Electrical Fundamentals I  4
MFG-107  Industrial Safety & First Aid  3
MFG-109  Computer Literacy for Technicians  3
MTH-050*  Technical Mathematics I  3
SM-150  Semiconductor Processing I  2
WR-101*  Communication Skills: Occupational Writing  3

SECOND TERM
EET-139  Principles of Troubleshooting I  2
EET-141  Electrical Fundamentals II  4
EET-157  Digital Logic I  3
ESH-100  Environmental Regulations  2
MTH-080*  Technical Mathematics II  3
SM-160  Semiconductor Processing II  2

THIRD TERM
EET-127  Semiconductor Circuits I  4
EET-142  Electrical Fundamentals III  4
SM-170  Semiconductor Processing III  2
SM-280  Electronics & Microelectronics/CWE  2
— —  Microelectronics Systems Technology program elective  3
— —  Human Relations requirement (see page 53)  3

Credits required for certificate  55

MICROELECTRONICS SYSTEMS TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

MICROELECTRONICS SYSTEMS TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

FIFTH TERM  CREDITS
EET-125  Principles of Fluid Power  3
MFG-209  Programming and Automation for Manufacturing  3
SM-136  Photolithography  2
SM-280  Electronics & Microelectronics/CWE  2
MFG-123  Instrumentation & Controls  3

SIXTH TERM
EET-230  Laser and Fiber Optics  3
MFG-133  Programmable Logic Controllers  3
SM-229  Vacuum Technology  2
— —  PE/Health requirement (see page 53)  3
— —  Microelectronics Systems Technology program electives  3

Credits required for degree  99

MICROELECTRONICS SYSTEMS TECHNOLOGY PROGRAM ELECTIVES:

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

*Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

ELECTRONICS ENGINEERING TECHNOLOGY
(Oregon Tech transfer courses)
The Manufacturing Technology Department, in cooperation with Oregon Tech, offers a number of transferable microelectronics classes into Oregon Tech’s Electronics Engineering Technology degree program. For information contact the Manufacturing Department, 503-594-3318.

Music Technology

Certificate

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

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

CAREERS
Careers include recording engineer, live sound engineer, media and sound post-production for internet companies, sound/music for video games, sound/media engineer for TV, recording/sound for advertising production, video post-production engineer, sound engineer for radio, video production engineer, film sound recording engineer, film post production for mixed media, film post production for sound only, film sound designer (FX), film foley artist, technical support for music production software companies, technical development for music production hardware and software and sound technical development for software companies.

For information contact Brian Rose, 503-594-3340 or brianr@clackamas.edu
### MUSIC TECHNOLOGY CERTIFICATE

**FALL TERM**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS-107 Introduction to Audio Recording I</td>
<td>3</td>
</tr>
<tr>
<td>MUS-140 Careers in Music</td>
<td>3</td>
</tr>
<tr>
<td>MUS-142 Introduction to Electronic Music I: MIDI</td>
<td>3</td>
</tr>
<tr>
<td>WR-101 Communication Skills: Occupational Writing or WR-121 English Composition</td>
<td>3-4</td>
</tr>
<tr>
<td>— — Music Technology program basics</td>
<td>3-4</td>
</tr>
<tr>
<td>— — Music Technology program electives</td>
<td>2-4</td>
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</table>

**WINTER TERM**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>MUS-206 Music Technology Program Electives</td>
<td>2-4</td>
</tr>
<tr>
<td>MUS-205 Music Technology Program Electives</td>
<td>2-4</td>
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</tbody>
</table>

**SPRING TERM**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS-280 Music/CWE</td>
<td>2</td>
</tr>
<tr>
<td>— — Music Technology program basics</td>
<td>3</td>
</tr>
<tr>
<td>— — Music Technology program electives</td>
<td>2</td>
</tr>
</tbody>
</table>

**MUSIC TECHNOLOGY PROGRAM BASICS**

Complete nine credits from the following:

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUP-100 Individual Lessons: Non-Music Majors</td>
<td>1</td>
</tr>
<tr>
<td>MUS-101 Music Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>MUS-102 Music Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>MUS-103 Music Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>MUS-105 Music Appreciation</td>
<td>3</td>
</tr>
<tr>
<td>MUS-111 Music Theory I</td>
<td>3</td>
</tr>
<tr>
<td>MUS-112 Music Theory I</td>
<td>3</td>
</tr>
<tr>
<td>MUS-113 Music Theory I</td>
<td>3</td>
</tr>
<tr>
<td>MUS-131 Group Piano: Piano for Pleasure</td>
<td>1</td>
</tr>
<tr>
<td>MUS-132 Group Piano: Piano for Pleasure</td>
<td>1</td>
</tr>
<tr>
<td>MUS-133 Group Piano: Piano for Pleasure</td>
<td>1</td>
</tr>
<tr>
<td>MUS-134 Group Voice: Anyone Can Sing</td>
<td>1</td>
</tr>
<tr>
<td>MUS-135 Group Voice: Anyone Can Sing</td>
<td>1</td>
</tr>
<tr>
<td>MUS-136 Group Voice: Anyone Can Sing</td>
<td>1</td>
</tr>
<tr>
<td>MUS-137 Group Guitar I: Guitar for Dummies</td>
<td>1</td>
</tr>
<tr>
<td>MUS-138 Group Guitar II</td>
<td>1</td>
</tr>
<tr>
<td>MUS-205 Music Literature: History of Jazz</td>
<td>4</td>
</tr>
<tr>
<td>MUS-206 Music Literature: History of Rock</td>
<td>4</td>
</tr>
</tbody>
</table>

**MUSIC TECHNOLOGY PROGRAM ELECTIVES**

Complete six credits from the following:

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUP-100 Individual Lessons: Non-Music Majors</td>
<td>1</td>
</tr>
<tr>
<td>MUP-102 Concert Band</td>
<td>2</td>
</tr>
<tr>
<td>MUP-104 Pep Band/Combo-Improv</td>
<td>1</td>
</tr>
<tr>
<td>MUP-105 Jazz Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>MUP-121 Clackamas Chorale</td>
<td>1</td>
</tr>
<tr>
<td>MUP-122 Chamber Choir</td>
<td>3</td>
</tr>
<tr>
<td>MUP-125 Voice Jazz Ensemble: Mainstream</td>
<td>3</td>
</tr>
<tr>
<td>MUP-241 College Orchestra</td>
<td>1</td>
</tr>
<tr>
<td>MUP-101 Music Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>MUS-102 Music Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>MUS-103 Music Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>MUS-105 Music Appreciation</td>
<td>3</td>
</tr>
<tr>
<td>MUS-130 Music &amp; Media: Sex, Drugs, Rock &amp; Roll</td>
<td>1</td>
</tr>
<tr>
<td>MUS-131 Group Piano: Piano for Pleasure</td>
<td>1</td>
</tr>
<tr>
<td>MUS-132 Group Piano: Piano for Pleasure</td>
<td>1</td>
</tr>
<tr>
<td>MUS-133 Group Piano: Piano for Pleasure</td>
<td>1</td>
</tr>
<tr>
<td>MUS-134 Group Voice: Anyone Can Sing</td>
<td>1</td>
</tr>
<tr>
<td>MUS-135 Group Voice: Anyone Can Sing</td>
<td>1</td>
</tr>
<tr>
<td>MUS-136 Group Voice: Anyone Can Sing</td>
<td>1</td>
</tr>
<tr>
<td>MUS-137 Group Guitar I: Guitar for Dummies</td>
<td>1</td>
</tr>
<tr>
<td>MUS-138 Group Guitar II</td>
<td>1</td>
</tr>
<tr>
<td>MUS-145 Introduction to Digital Sound, Video &amp; Animation</td>
<td>3</td>
</tr>
<tr>
<td>MUS-147 Music, Sound &amp; Moviemaking</td>
<td>1</td>
</tr>
<tr>
<td>MUS-148 Live Sound Engineering</td>
<td>3</td>
</tr>
<tr>
<td>MUS-205 Music Literature: History of Jazz</td>
<td>4</td>
</tr>
<tr>
<td>MUS-206 Music Literature: History of Rock</td>
<td>4</td>
</tr>
<tr>
<td>MUS-247 Music, Sound &amp; Moviemaking</td>
<td>3</td>
</tr>
</tbody>
</table>

### Nursing

#### Associate of Applied Science Degree

#### NURSING ASSISTANT OPTIONS

Being a certified nursing assistant can be a fulfilling, lifelong vocation or the first step in your health care career.

#### NURSING ASSISTANT 1 (CNA 1)

Clackamas Community College Nursing Assistant course provides the student with the skills to perform basic level nursing care. Certified Nursing Assistants are defined by law as people who assist licensed nursing personnel in the provision of nursing care. Content includes: introduction to health care facilities, communication, basic body structure and function, patient needs, preventing infection, body mechanics, and much more. This course is approved by the Oregon State Board of Nursing.

Class times may vary term to term. This one-term course consists of 150 contact hours including 75 hours of lecture and lab and 75 hours of clinical experience. Clinical hours begin the 6th week of the course and are normally done at local Long Term Care Centers. Approximate length of the course is 11 weeks.

#### COURSE OFFERED—SUMMER, FALL, WINTER, SPRING TERMS:

- **NUR-100** Certified Nursing Assistant 1 7 credits
- **NUR-100C** Certified Nursing Assistant 1 Clinical 0 credits

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

The cost of the course will include pre-registration requirements such as Criminal background check, American Heart Association CPR for Healthcare Professionals, immunizations and UA drug screen. Course tuition, textbooks, name badge, state exam fee, and a watch with a second hand, uniform and shoes.

*Continued*
Nursing continued…

READING & WRITING COMPETENCIES:
You will need to prove competency levels in reading and writing. Competency in reading and writing is measured by CCC placement test(s) or previous college coursework (unofficial transcript). Placement exam scores must be at least WR-121 and RD-115 to be eligible to apply or an unofficial transcript indicating WR-095 was taken with a C or better.

You must be at least 18 years of age. High school students may apply with written authorization from their high school counselor. (Proof must be provided.)

Before you will be permitted to enroll you must attend the Nursing Assistant Mandatory Orientation. Specific details can be found in the college's Schedule of Classes and online. For more information, email Health-Sciences-Questions@clackamas.edu

NURSING ASSISTANT II—ACUTE CARE TRAINING (CNA 2)
This course is designed to prepare students to perform routine and acute nursing assistant tasks for clients in the following venues: hospital, long-term and skilled care facilities and the community. Instruction incorporates concepts of safety and preventing complications, communicating client responses to the nurse, and documenting/recording outcomes of client care. By Oregon State Board of Nursing regulations, the course is restricted to those who hold a current, unencumbered Oregon CNA 1 license and have their name listed on the CNA Registry. Also, you must be able to demonstrate proficiency in CNA 1 skills during lab sessions. This course meets the minimum state requirements with 42 hours of lecture and lab instruction as well as 30 hours of clinical experience.

COURSE OFFERED—SUMMER, FALL, WINTER, SPRING TERMS:
NUR-101 Certified Nursing Assistant 2 3 credits
NUR-101C Certified Nursing Assistant 2 Clinical 0 credits

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

NURSING PROGRAM
Clackamas Community College is a full partner in the Oregon Consortium for Nursing Education (OCNE). The curriculum in OCNE nursing programs is a competency-based curriculum developed in collaboration with Oregon Health & Science University (OHSU) and other community colleges around the state. This curriculum, which has been approved by the Oregon State Board of Education as well as Oregon State Board of Nursing, can ultimately culminate in a Baccalaureate of Science degree with a focus in nursing offered by OHSU. For more information on the OCNE curriculum, refer to www.ocne.org

Admission into the Nursing program is by special application only. The application is a two-step process. Students must submit application to the Registrar’s Office by the deadline. Qualified applicants will progress to the interview/essay portion of the application process. Acceptance to the nursing program allows for co-admission to Clackamas Community College and Oregon Health & Science University School of Nursing.

A physical examination by a licensed healthcare provider, immunizations, criminal history background check, and urine drug testing are required prior to clinical experience in the first term of the program. Drug use and/or conviction of a felony may result in the Oregon State Board of Nursing denying licensure upon graduation.

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

The OCNE curriculum is designed as a four-year course of study with the first year devoted to pre-admission requirements. The second and third year of designated study will be taken at Clackamas Community College. Upon completion of the CCC nursing program, students will be eligible to receive their Associate of Applied Science degree in nursing and take the national examination (NCLEX-RN) for registered nurse licensure. Graduates of the nursing program at Clackamas Community College should be prepared for entry-level employment as a registered nurse. The student may elect to continue for the fourth year of study, leading to a Baccalaureate of Science degree with a focus in nursing offered by OHSU.

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

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

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

Students are eligible to be considered for admission to the nursing program after completing 30 credit hours of the Prerequisite/Required Preparatory courses listed below. BI-231 (Human Anatomy/Physiology I) must be completed and math competency must be demonstrated prior to submission of program application.
Completion of BI-234 prior to entry into the nursing program is strongly recommended. Failure to pass this course during fall term will prevent progression in the nursing program.

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

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

Completion of all Prerequisite/Required Preparatory courses must be with a letter grade of C or better. Plus and minus grade will not be factored into the GPA calculations. If a course has been taken more than once, the most recent grade received will be the course considered. Application to the nursing program requires a minimum GPA of 3.0 for all completed Prerequisite/Required Preparatory courses.

**NURSING PREREQUISITES/REQUIRED PREPARATORY COURSES**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
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<tbody>
<tr>
<td>BI-231</td>
<td>Human Anatomy/Physiology I</td>
</tr>
<tr>
<td>BI-232</td>
<td>Human Anatomy/Physiology II</td>
</tr>
<tr>
<td>BI-233</td>
<td>Human Anatomy/Physiology III</td>
</tr>
<tr>
<td>FN-225</td>
<td>Nutrition</td>
</tr>
<tr>
<td>MTH-095</td>
<td>Algebra III</td>
</tr>
<tr>
<td>PSY-215</td>
<td>Introduction to Developmental Psychology</td>
</tr>
<tr>
<td>WR-121</td>
<td>English Composition</td>
</tr>
<tr>
<td>WR-122</td>
<td>English Composition</td>
</tr>
<tr>
<td><strong>-</strong></td>
<td>Humanities, Social Science, or Natural Science</td>
</tr>
</tbody>
</table>

- The following courses or their equivalents will meet the writing requirement: WR-121, WR-122 and WR-123 at 3 credits each, or WR-121 and 122 at 4 credits each.
- Students may need to take elective credits in order to meet the 45 credit hour prerequisite minimum required for entry into the nursing program.
- At least six credits must come from Social Sciences
- See list below for approved prerequisite/elective courses

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

**NURSING ASSOCIATE OF APPLIED SCIENCE DEGREE:**

**FIRST TERM**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI-112*</td>
<td>General Biology for Health Sciences or Biology with genetics</td>
</tr>
<tr>
<td>BI-234</td>
<td>Introductory Microbiology**</td>
</tr>
<tr>
<td>NRS-110</td>
<td>Foundations of Nursing – Health Promotion</td>
</tr>
<tr>
<td>NRS-110C</td>
<td>Foundations of Nursing – Health Promotion Clinical</td>
</tr>
<tr>
<td>PE-185</td>
<td>Physical Education***</td>
</tr>
</tbody>
</table>

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

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

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

**SECOND TERM**

<table>
<thead>
<tr>
<th>COURSE</th>
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</tr>
</thead>
<tbody>
<tr>
<td>NRS-111</td>
<td>Foundations of Nursing in Chronic Illness I</td>
</tr>
<tr>
<td>NRS-111C</td>
<td>Foundations of Nursing in Chronic Illness I Clinical</td>
</tr>
<tr>
<td>NRS-230</td>
<td>Clinical Pharmacology I</td>
</tr>
<tr>
<td>NRS-232</td>
<td>Pathophysiological Processes I</td>
</tr>
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**THIRD TERM**

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<tbody>
<tr>
<td>NRS-112</td>
<td>Foundations of Nursing in Acute Care I</td>
</tr>
<tr>
<td>NRS-112C</td>
<td>Foundations of Nursing in Acute Care I Clinical</td>
</tr>
<tr>
<td>NRS-231</td>
<td>Clinical Pharmacology II</td>
</tr>
<tr>
<td>NRS-233</td>
<td>Pathophysiological Processes II</td>
</tr>
<tr>
<td><strong>-</strong></td>
<td>Humanities, Social Science or Natural Science electives, if needed</td>
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**SUMMER TERM OPTION**

<table>
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<tr>
<th>COURSE</th>
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</thead>
<tbody>
<tr>
<td>BI-112*</td>
<td>General Biology for Health Sciences or Biology with Genetics</td>
</tr>
</tbody>
</table>

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

**FOURTH TERM**

<table>
<thead>
<tr>
<th>COURSE</th>
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</tr>
</thead>
<tbody>
<tr>
<td>NRS-222</td>
<td>Nursing in Acute Care II &amp; End of Life</td>
</tr>
<tr>
<td>NRS-222C</td>
<td>Nursing in Acute Care II &amp; End of Life Clinical</td>
</tr>
<tr>
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<td>Humanities, Social Science or Natural Science electives, if needed</td>
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**FIFTH TERM**

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</thead>
<tbody>
<tr>
<td>NRS-221</td>
<td>Nursing in Chronic Illness II &amp; End of Life</td>
</tr>
<tr>
<td>NRS-221C</td>
<td>Nursing in Chronic Illness II &amp; End of Life Clinical</td>
</tr>
<tr>
<td><strong>-</strong></td>
<td>Humanities, Social Science or Natural Science electives, if needed</td>
</tr>
</tbody>
</table>

**SIXTH TERM**

<table>
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<tr>
<th>COURSE</th>
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<tbody>
<tr>
<td>NRS-224</td>
<td>Integrative Practicum</td>
</tr>
<tr>
<td>NRS-224C</td>
<td>Integrative Practicum Clinical</td>
</tr>
<tr>
<td>WR-123*</td>
<td>English Composition or WR-227 Technical Report Writing</td>
</tr>
<tr>
<td><strong>-</strong></td>
<td>Humanities, Social Science or Natural Science electives, if needed</td>
</tr>
</tbody>
</table>

Credits required for degree 90-93

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

Students must achieve C or higher grades in all required courses (including prerequisites/preparatory courses) prior to advancing to the next term.

Core curriculum is sequential and may not be taken out of order. Core nursing curriculum is intended to be completed in two academic years for an AAS degree.

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

Note: All electives must be taken at the 100 level or higher unless otherwise noted.
Nursing continued…

HUMANITIES (ARTS & LETTERS)
Courses used in this area must be at least three credits.
Select courses with a prefix of:
- ASL, FR, GER, RUS, SPN (other foreign languages are accepted; languages must be 200 level)
- ART, DMC, ENG, HUM (except HUM-100), J, MUP, MUS, PHL, R, TA
- COMM (courses numbered COMM-126 and above)
- WR (except WR-101, 121, 122, 123 or 227)

SOCIAL SCIENCE
Courses used in this area must be at least three credits.
Select courses with a prefix of:
- ANT, EC, GEO, HST, PS, PSY, SOC, SSC, WS

NATURAL SCIENCES (SCIENCE/MATH/COMPUTER SCIENCE)
Courses used in this area must be at least six credits.
Select courses with a prefix of:
- ASC, BI* (except BI-163), BOT, CH (except CH-150), CS, ESR, G (except G-119, G-124), GS (except GS-160), MTH (MTH-095** accepted), PH, Z
- * Concurrent enrollment required for BI-160/BI-160L or BI-165C/BI-165CL
- ** MTH-095 may be applied toward prerequisite credits but not toward the BSN degree.

NURSING
- NUR-160, NUR-217, NUR-288

BACCALAUREATE OF SCIENCE DEGREE WITH A FOCUS IN NURSING
After receiving the AAS degree in Nursing, students who wish to continue on for their baccalaureate degree may do so through co-admission at OHSU. Students who plan to continue through to OHSU must be aware that to earn their Baccalaureate of Science degree with a focus in Nursing, they must have:

- Two years of the same high school foreign language, or two terms of college-level foreign language credit (includes American Sign Language) or a foreign language proficiency examination.

- MTH-243 Statistics I

COURSE WORK FOR A BACCALAUREATE OF SCIENCE DEGREE WITH A FOCUS IN NURSING THROUGH OHSU WILL INCLUDE THE FOLLOWING NURSING CLASSES:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>NRS-410</td>
<td>Population Based Care: Chronic Illness &amp; Health Promotion</td>
</tr>
<tr>
<td>NRS-411</td>
<td>Epidemiology</td>
</tr>
<tr>
<td>NRS-412</td>
<td>Leadership Outcomes Management in Nursing</td>
</tr>
<tr>
<td>NRS-424*</td>
<td>Clinical Immersion I</td>
</tr>
<tr>
<td>NRS-425</td>
<td>Clinical Immersion II</td>
</tr>
<tr>
<td>NRS-426</td>
<td>Capstone II or Minor course work</td>
</tr>
</tbody>
</table>

At least 15 credits of elective credit must be taken at the upper division level (300/400 level) for the BS program. These can be taken under a co-enrollment agreement with PSU, Oregon Tech, EOU, or SOU.

* NRS-224 articulates to OHSU for substitution of NRS-424.

Occupational Skills Training

Certification

The Occupational Skills Training program provides the opportunity for students to receive hands-on training in a specific occupational area. This program is designed for students who need or prefer work-based training to develop their skills. Students may begin their training at any time.

Students participate in supervised and structured work-based training in addition to classroom instruction. The program utilizes local businesses as training sites.

Individualized training plans are developed in consultation with the student, work-site trainer, CCC faculty and program coordinator.

PROGRAM OUTCOMES

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

OCCUPATIONAL SKILLS TRAINING CERTIFICATE

PROGRAM REQUIREMENTS

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>OST-180</td>
<td>Occupational Skills Training/CWE</td>
<td>24</td>
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<td>Occupational related courses</td>
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RELATED INSTRUCTION REQUIREMENTS

<table>
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<tr>
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<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>MTH-050</td>
<td>Technical Mathematics I</td>
<td>3</td>
</tr>
<tr>
<td>WR-101</td>
<td>Communication Skills: Occupational Writing</td>
<td>3</td>
</tr>
<tr>
<td>— —</td>
<td>Human Relations requirement (see page 53)</td>
<td>3</td>
</tr>
</tbody>
</table>

Credits required for certificate | 48 |
Paraeducator

Certificate

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

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

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

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

PROGRAM OUTCOMES

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

PORTLAND STATE UNIVERSITY TRANSFER AGREEMENT

Portland State University will accept the Paraeducator Certificate as part of a 90 credit Associate of General Studies. Talk with a staff member in Student Life & Leadership, or Paula Hamm at 503-594-3210 for requirements.

Professional Truck Driver

Certificate

The Professional Truck Driver program provides the necessary training for employment within the Transportation and Logistics field. Course work covers rules, regulations and practices, practical applications, customer service skills, and Commercial Driver’s Licensing (CDL) training provided in conjunction with the IITR truck driving school. This four class series is part of a statewide program designed to put you in the driver’s seat of an exciting career.

PROGRAM OUTCOMES

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

CAREERS

Career opportunities may include paraeducator positions in public or private elementary or secondary schools. For information contact Yvonne Smith, 503-594-3207 or yvonnes@clackamas.edu

PARAEDUCATOR CERTIFICATE

<table>
<thead>
<tr>
<th>FALL TERM</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-121  Computer Applications</td>
<td></td>
</tr>
<tr>
<td>or BA-131 Introduction to Business Computing</td>
<td>3-4</td>
</tr>
<tr>
<td>ED-100  Introduction to Education</td>
<td>3</td>
</tr>
<tr>
<td>ED-113  Instructional Strategies in Reading &amp; Language Arts</td>
<td>3</td>
</tr>
<tr>
<td>ED-131  Instructional Strategies</td>
<td>3</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>WINTER TERM</th>
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<tbody>
<tr>
<td>ED-169  Overview of Students with Special Needs</td>
<td>3</td>
</tr>
<tr>
<td>ED-200  Foundations of Education</td>
<td>3</td>
</tr>
<tr>
<td>ED-229  Learning and Development</td>
<td>3</td>
</tr>
<tr>
<td>ED-280  Practicum/CWE</td>
<td>3-6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPRING TERM</th>
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<tbody>
<tr>
<td>ED-114  Instructional Strategies in Math and Science</td>
<td>3</td>
</tr>
<tr>
<td>ED-130  Comprehensive Classroom Management</td>
<td>3</td>
</tr>
<tr>
<td>ED-254  Instructional Strategies for English Language Learners</td>
<td>3</td>
</tr>
<tr>
<td>ED-258  Multicultural Education</td>
<td>3</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>SUMMER TERM</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ED-235  Educational Technology</td>
<td>3</td>
</tr>
<tr>
<td>MTH-065  Algebra II</td>
<td>4</td>
</tr>
<tr>
<td>RD-090  Intermediate Reading Skills*</td>
<td>3</td>
</tr>
<tr>
<td>WR-121  English Composition</td>
<td>4</td>
</tr>
</tbody>
</table>

Credits required for certificate: 50-54

*The reading requirement may be challenged in the testing center.
Professional Truck Driver continued…

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

For information contact Applied Technology at 503-594-3064 or Paul Wanner at paulw@clackamas.edu

PROFESSIONAL TRUCK DRIVER CERTIFICATE:

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTL-101 Introduction to Professional Truck Driving &amp; Logistics</td>
<td>4</td>
</tr>
<tr>
<td>TTL-121 Practical Applications in Professional Truck Driving &amp; Logistics</td>
<td>6</td>
</tr>
<tr>
<td>TTL-141 Transportation &amp; Logistics Customer Service Skills</td>
<td>1-3</td>
</tr>
<tr>
<td>TTL-180 Transportation &amp; Logistics/CWE</td>
<td>6</td>
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<tr>
<td>Credits required for certificate</td>
<td>17-19</td>
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</tbody>
</table>

Project Management

Associate of Applied Science Degree

Upon completion of the two-year Project Management Associate of Applied Science (AAS) Degree program, students with appropriate work experience are qualified to sit for the national certification examination in project management and to earn the PMP professional designation.

PROGRAM OUTCOMES

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

CAREERS

Careers include project and program management, project portfolio management, and project administration. Potential job titles include project manager, program manager, project scheduler, cost estimator, project portfolio manager, project administrator, project leader, project office manager/director, procurement planner/analyst, procurement assistant, project assistant, and project coordinator.

For information contact Kathy Christensen, 503-594-3072 or kathc@clackamas.edu

PROJECT MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

<table>
<thead>
<tr>
<th>FALL TERM</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>BA-120</td>
<td>Project Management Fundamentals 3</td>
</tr>
<tr>
<td>BA-122</td>
<td>Teamwork 3</td>
</tr>
<tr>
<td>BA-123</td>
<td>Leadership &amp; Motivation 3</td>
</tr>
<tr>
<td>BA-131</td>
<td>Introduction to Business Computing 4</td>
</tr>
<tr>
<td>— —</td>
<td>PE/Health requirement (see page 53) 1</td>
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WINTER TERM

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>BA-111</td>
<td>General Accounting 4</td>
</tr>
<tr>
<td>or BA-211</td>
<td>Financial Accounting I 4</td>
</tr>
<tr>
<td>BA-125</td>
<td>Advanced Project Management Tools 5</td>
</tr>
<tr>
<td>BT-177</td>
<td>Microsoft Project 3</td>
</tr>
<tr>
<td>WR-121</td>
<td>English Composition 4</td>
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SPRING TERM

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

PROJECT MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

<table>
<thead>
<tr>
<th>FALL TERM</th>
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</tr>
</thead>
<tbody>
<tr>
<td>BA-205</td>
<td>Solving Communication Problems with Technology 4</td>
</tr>
<tr>
<td>BA-223</td>
<td>Principles of Marketing 4</td>
</tr>
<tr>
<td>BA-285</td>
<td>Human Relations in Business 4</td>
</tr>
<tr>
<td>MTH-065</td>
<td>Algebra II 4</td>
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<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>BA-206</td>
<td>Management Fundamentals 4</td>
</tr>
<tr>
<td>BA-226</td>
<td>Business Law 4</td>
</tr>
<tr>
<td>COMM-111</td>
<td>Public Speaking 4</td>
</tr>
<tr>
<td>— —</td>
<td>Any BA/BT course not already used in Project Management Program 3</td>
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<table>
<thead>
<tr>
<th>SPRING TERM</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>BA-225</td>
<td>Business Report Writing 3-4</td>
</tr>
<tr>
<td>or WR-227</td>
<td>Technical Report Writing</td>
</tr>
<tr>
<td>BA-268</td>
<td>Applied Project Demonstration 3</td>
</tr>
<tr>
<td>BA-280</td>
<td>Business/CWE 3</td>
</tr>
<tr>
<td>— —</td>
<td>Any BA/BT course not already used in Project Management program 4</td>
</tr>
</tbody>
</table>

Credits required for degree 90-91
Project Management

Certificate

This program is designed for students who are interested in upgrading their professional skills, those who want to learn new and valuable interpersonal skills and those who might be interested in pursuing the two-year Project Management Associate of Applied Science (AAS) Degree.

PROGRAM OUTCOMES

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

CAREERS

Career opportunities include career enhancement such as more marketable skills in one’s current employment or job opportunities in a project management training program. For information contact Kathy Christensen, 503-594-3072 or kathc@clackamas.edu

PROJECT MANAGEMENT CERTIFICATE

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-120</td>
<td>Project Management Fundamentals 3</td>
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<tr>
<td>BA-122</td>
<td>Teamwork 3</td>
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<td>BA-123</td>
<td>Leadership and Motivation 3</td>
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<tr>
<td>BA-124</td>
<td>Negotiation 3</td>
</tr>
<tr>
<td>BA-125</td>
<td>Advanced Project Management Tools 5</td>
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<td>BA-126</td>
<td>Project Management: Workshop 3</td>
</tr>
<tr>
<td>BT-177</td>
<td>Microsoft Project 3</td>
</tr>
</tbody>
</table>

Credits required for certificate 23

Project Management Leadership & Communication

Career Pathway Certificate

This program is designed for students with prior project management experience who want to build their interpersonal skills, including effective approaches to leadership and motivation, group dynamics, conflict, power, and organizational behavior. This program also provides a solid grounding in effective written and oral communication techniques, including meeting management, presentations, reports and correspondence. Since project managers typically spend over 80 percent of their time interfacing with people—communicating—these skills are critical to successful project management. For information contact Kathy Christensen, 503-594-3072 or kathc@clackamas.edu

PROJECT MANAGEMENT LEADERSHIP & COMMUNICATION CAREER PATHWAY CERTIFICATE

<table>
<thead>
<tr>
<th>COURSE</th>
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<td>Teamwork 3</td>
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<tr>
<td>BA-123</td>
<td>Leadership &amp; Motivation 3</td>
</tr>
<tr>
<td>BA-124</td>
<td>Negotiation 3</td>
</tr>
<tr>
<td>BA-205</td>
<td>Solving Communication Problems with Technology 4</td>
</tr>
<tr>
<td>BA-285</td>
<td>Human Relations in Business 4</td>
</tr>
<tr>
<td>COMM-111</td>
<td>Public Speaking 4</td>
</tr>
</tbody>
</table>

Credits required for certificate 21

Project Management Tools & Techniques

Career Pathway Certificate

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

For information contact Kathy Christensen, 503-594-3072 or kathc@clackamas.edu

PROJECT MANAGEMENT TOOLS & TECHNIQUES CAREER PATHWAY CERTIFICATE

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>BA-120</td>
<td>Project Management Fundamentals 3</td>
</tr>
<tr>
<td>BA-123</td>
<td>Advanced Project Management Tools 5</td>
</tr>
<tr>
<td>BA-126</td>
<td>Project Management Workshop 3</td>
</tr>
<tr>
<td>BA-217</td>
<td>Budgeting for Managers 3</td>
</tr>
<tr>
<td>BT-177</td>
<td>Microsoft Project 3</td>
</tr>
<tr>
<td>CS-135S</td>
<td>Microsoft Excel 3</td>
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</tbody>
</table>

Credits required for certificate 20
Renewable Energy Technology

Certificate

Associate of Applied Science Degree

The Renewable Energy Technology (RET) program provides technical training for employment in the field of manufacturing, installation and maintenance of renewable energy systems and products. Graduates will be prepared to integrate, install and repair equipment related to equipment and controls. This program takes a broad-based approach to training renewable energy technicians, with emphasis on mechanical and electro-mechanical systems, fluid power, instrumentation and controls as well as systems troubleshooting. RET graduates will be prepared to work in the capacity of a technician with specialized skills in energy system measurement, energy efficiency, system design and electronic controls.

PROGRAM OUTCOMES

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

CAREERS

Career opportunities include residential/commercial energy systems integrator, energy audit and efficiency technician, energy systems installer, photo-voltaic (PV) manufacturing and industrial maintenance technician, wind turbine technician, limited renewable technician; PV, geothermal and solar thermal technicians. Additional opportunities exist in the utilities and building trades.

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

RENEWABLE ENERGY TECHNOLOGY CERTIFICATE

<table>
<thead>
<tr>
<th>FIRST TERM</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>MFG-109</td>
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<td>MFG-130</td>
<td>3</td>
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<tr>
<td>MTH-050</td>
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<tr>
<td>RET-200</td>
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<td>RET-240</td>
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<td>EET-139</td>
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<tr>
<td>MFG-107</td>
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<tr>
<td>MFG-131</td>
<td>3</td>
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<td>MTH-080</td>
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THIRD TERM

<table>
<thead>
<tr>
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<th>Title</th>
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<tbody>
<tr>
<td>MET-170</td>
<td>Manufacturing Processes</td>
<td>3</td>
</tr>
<tr>
<td>RET-211</td>
<td>Renewable Energy II: System Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>RET-280</td>
<td>Renewable Energy Technology/CWE</td>
<td>2</td>
</tr>
<tr>
<td>WR-101</td>
<td>Communication Skills: Occupational Writing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Human Relations requirement (see page 53)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Renewable Energy Technology program elective</td>
<td>3</td>
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</tbody>
</table>

Credits required for certificate 48

RENEWABLE ENERGY TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

Complete certificate program.

RENEWABLE ENERGY TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE: 2ND YEAR

<table>
<thead>
<tr>
<th>FOURTH TERM</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>EET-215</td>
<td>Electromechanical Systems I</td>
</tr>
<tr>
<td>EET-239</td>
<td>Principles of Troubleshooting II</td>
</tr>
<tr>
<td>HUM-180</td>
<td>Pathway to Sustainability</td>
</tr>
<tr>
<td>or HUM-181</td>
<td>Pathway to Sustainability</td>
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<tr>
<td>or HUM-182</td>
<td>Pathway to Sustainability</td>
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<tr>
<td>MFG-104</td>
<td>Print Reading</td>
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<tr>
<td>RET-213</td>
<td>Renewable Energy III: Installation &amp; Maintenance</td>
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<td>Renewable Energy Technology program elective</td>
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FIFTH TERM

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MFG-133</td>
<td>Programmable Logic Controllers</td>
<td>3</td>
</tr>
<tr>
<td>MFG-221</td>
<td>Materials Science</td>
<td>3</td>
</tr>
<tr>
<td>RET-217</td>
<td>Renewable Energy Capstone</td>
<td>3</td>
</tr>
<tr>
<td>RET-280</td>
<td>Renewable Energy Technology/CWE</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>PE/Health requirement (see page 53)</td>
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<td>Renewable Energy Technology program elective</td>
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SixTH TERM

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<td>MFG-133</td>
<td>Programmable Logic Controllers</td>
<td>3</td>
</tr>
<tr>
<td>MFG-221</td>
<td>Materials Science</td>
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<td>Renewable Energy Capstone</td>
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<tr>
<td>RET-280</td>
<td>Renewable Energy Technology/CWE</td>
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</tr>
<tr>
<td></td>
<td>PE/Health requirement (see page 53)</td>
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<td></td>
<td>Renewable Energy Technology program elective</td>
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</table>

Credits required for degree 97

RENEWABLE ENERGY TECHNOLOGY PROGRAM ELECTIVES

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

The Energy Systems Maintenance Technician certificate provides students with the basic technical skills and principles to support manufacturing, installation and maintenance, and electronics and communication engineers related to renewable energy.

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

CAREERS
Career opportunities include employment in the field of manufacturing, installation and maintenance of renewable energy production.

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

ENERGY SYSTEMS MAINTENANCE TECHNICIAN CAREER PATHWAY CERTIFICATE

<table>
<thead>
<tr>
<th>COURSE</th>
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<tr>
<td>EET-139</td>
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<td>MFG-104</td>
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<td>MFG-107</td>
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<td>MFG-130</td>
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<td>MTH-050</td>
<td>3</td>
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<tr>
<td>RET-200</td>
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<tr>
<td>— — Energy Systems Maintenance Technician program electives</td>
<td>6-8</td>
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Credits required for certificate 23-25

ENERGY SYSTEMS MAINTENANCE TECHNICIAN PROGRAM ELECTIVES
Select 6-8 Elective credits from the following:

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>MET-170</td>
<td>3</td>
</tr>
<tr>
<td>MFG-111</td>
<td>6</td>
</tr>
<tr>
<td>RET-209</td>
<td>3</td>
</tr>
<tr>
<td>WLD-150</td>
<td>4</td>
</tr>
<tr>
<td>or WLD-102 Introduction to Welding</td>
<td>2</td>
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</table>

Retail Management

Associate of Applied Science Degree

This degree is sponsored by members of the retail industry and is recommended for students currently working in retail supervisory and middle management, as well as traditional students who desire to work in retail sales and progress into management roles and responsibilities. Course work is specific to the retail industry and focuses on preparing retail employees for upward mobility.

PROGRAM OUTCOMES
Upon successfully completing this degree, students should be able to demonstrate the skills necessary to work as retail sales supervisors and managers, and to advance to higher levels of responsibility including corporate advancement opportunities. Successful students will develop hard and soft skills in technology and communication to be effective team leaders and motivators. Students will experience a variety of roles in the retail industry and will pursue a career pathway that leads to increasing challenge, responsibility and opportunities.

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

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

RETAIL MANAGEMENT ASSOCIATE OF APPLIED SCIENCE DEGREE: 1ST YEAR

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

WINTER TERM

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

SPRING TERM

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

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

**FALL TERM**

<table>
<thead>
<tr>
<th>COURSE</th>
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<tbody>
<tr>
<td>BA-249</td>
<td>Retailing</td>
</tr>
<tr>
<td>BA-251</td>
<td>Supervisory Management</td>
</tr>
<tr>
<td>COMM-140</td>
<td>Intercultural Communication**</td>
</tr>
<tr>
<td>HE-261*</td>
<td>Community CPR</td>
</tr>
<tr>
<td>— —</td>
<td>Any BA/BT/HD course not already in the Retail Management program</td>
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</table>

**WINTER TERM**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>BA-112</td>
<td>General Accounting II</td>
</tr>
<tr>
<td>or BA-212</td>
<td>Financial Accounting II**</td>
</tr>
<tr>
<td>BA-226</td>
<td>Business Law 1**</td>
</tr>
<tr>
<td>COMM-105</td>
<td>Listening*</td>
</tr>
<tr>
<td>or EC-200</td>
<td>Introduction to Economics</td>
</tr>
<tr>
<td>or EC-201</td>
<td>Principles of Economics: MICRO** with EC-202 Principles of Economics: MACRO (8)**</td>
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**SPRING TERM**

<table>
<thead>
<tr>
<th>COURSE</th>
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<tbody>
<tr>
<td>BA-124</td>
<td>Negotiation</td>
</tr>
<tr>
<td>BA-238</td>
<td>Sales</td>
</tr>
<tr>
<td>BA-261</td>
<td>Consumer Behavior</td>
</tr>
<tr>
<td>BA-280</td>
<td>Business/CWE</td>
</tr>
<tr>
<td>— —</td>
<td>Any BA/BT/HD course not already in the Retail Management program</td>
</tr>
</tbody>
</table>

Credits required for degree 90-92

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

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

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

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

**MARYLHURST UNIVERSITY TRANSFER AGREEMENT**

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

**THIRD YEAR ARTICULATION TO MARYLHURST UNIVERSITY**

**FALL TERM**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>BI-101</td>
<td>General Biology**</td>
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<tr>
<td>MTH-111</td>
<td>College Algebra</td>
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**WINTER TERM**

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<td>General Biology**</td>
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<td>MTH-243</td>
<td>Statistics I**</td>
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<td>WR-122</td>
<td>English Composition**</td>
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**SPRING TERM**

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<tr>
<td>WR-227</td>
<td>Technical Report Writing***</td>
</tr>
<tr>
<td>— —</td>
<td>Science elective*</td>
</tr>
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</table>

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

**Retail Management**

This certificate is sponsored by members of the retail industry and is recommended for students currently working retail sales positions or those students who would like to work in retail sales and progress into management roles and responsibilities. Course work is specific to the retail industry and focuses on preparing retail employees for upward mobility.

**PROGRAM OUTCOMES**

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

**CAREERS**

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

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

**RETAIL MANAGEMENT CERTIFICATE**

**FALL TERM**

<table>
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<tr>
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<td>Business Math</td>
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<td>BA-131</td>
<td>Introduction to Business Computing</td>
</tr>
<tr>
<td>COMM-111</td>
<td>Public Speaking</td>
</tr>
<tr>
<td>WR-101</td>
<td>Communication Skills: Occupational Writing or WR-121 English Composition</td>
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**WINTER TERM**

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<td>BA-111</td>
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<td>BA-205</td>
<td>Solving Communication Problems with Technology</td>
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<td>BA-206</td>
<td>Management Fundamentals</td>
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<tr>
<td>BA-223</td>
<td>Principles of Marketing</td>
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**SPRING TERM**

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<td>Human Resource Management</td>
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<td>Retailing</td>
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<td>BA-285</td>
<td>Human Relations in Business</td>
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<td>— —</td>
<td>Any BA/BT course not already included in the Retail Management program</td>
</tr>
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</table>

Credits required for certificate 45-46

* For this certificate, BA-104 meets the Related Instruction Computation requirement.
Western Association of Food Chains (WAFC) Retail Management

**Certificate**

This certificate is sponsored by members of the retail industry and is recommended for students currently working in retail sales positions or those students who would like to work in retail sales and progress into management roles and responsibilities. Course work is specific to the retail industry and focuses on preparing retail employees for upward mobility.

**PROGRAM OUTCOMES**

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

**CAREERS**

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

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

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

<table>
<thead>
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<td>Management Fundamentals</td>
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<td>BA-223</td>
<td>Principles of Marketing</td>
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<td>Human Resource Management</td>
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<td>Retailing</td>
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<td>BA-285</td>
<td>Human Relations in Business</td>
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<tr>
<td>COMM-111</td>
<td>Public Speaking</td>
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</table>

**Credits required for certificate**: 38

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

Urban Agriculture

**Certificate**

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

**PROGRAM OUTCOMES**

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

**CAREERS**

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

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

**URBAN AGRICULTURE CERTIFICATE**

<table>
<thead>
<tr>
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<tr>
<td>HOR-124</td>
<td>Food Harvest</td>
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<td>HOR-125</td>
<td>Food Production in the Willamette Valley</td>
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<tr>
<td>HOR-235</td>
<td>Weed Identification</td>
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<tr>
<td>HOR-250</td>
<td>Western Herbs</td>
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<tr>
<td>MTH-050</td>
<td>Technical Mathematics I</td>
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<tr>
<td>or MTH-065</td>
<td>Algebra II (or higher level math)</td>
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<tbody>
<tr>
<td>BA-250</td>
<td>Small Business Management</td>
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<tr>
<td>HOR-132</td>
<td>Pesticide Selection &amp; Use or HOR-231</td>
</tr>
<tr>
<td>HOR-135</td>
<td>Propagation of Edible Plants</td>
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<tr>
<td>HOR-136</td>
<td>Urban Agriculture Practicum/Winter</td>
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<tr>
<td>HOR-216</td>
<td>Integrated Pest Management</td>
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Urban Agriculture continued…

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

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

Credits required for certificate 60-64

Water & Environmental Technology

Professional Upgrade

Certification: Associate of Applied Science Degree

The Water & Environmental Technology program provides career technical classes combined with field experience. Classes are offered in day/evening combinations and have enrollment limits to enhance instructional quality and job placement.

Course work emphasizes fundamental aspects of drinking water distribution, drinking water treatment, wastewater collection and wastewater treatment. Course work includes 240 hours of industry cooperative work experience, laboratory methods in environmental chemistry, aquatic microbiology and preparation for the provisional operator certification exams.

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

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

For information contact Matthew LaForce 503-594-3148 or laforce@clackamas.edu

WATER & ENVIRONMENTAL TECHNOLOGY CERTIFICATE

FALL TERM

CH-104 Introductory Chemistry or CH-221 General Chemistry 5
MTH-082A Wastewater Math I 1
MTH-082B Waterworks Math I 1
WET-110 Wastewater Operations I 3
WET-111 Waterworks Operations I 3
WR-101 Communication Skills: Occupational Writing or WR-121 English Composition 3-4
— — Human Relations requirement (see page 53) (Recommended: PSY-101) 3

WINTER TERM

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

SPRING TERM

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

Credits required for certificate 57-58

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

Complete certificate program.

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

FALL TERM

WET-241 Aquatic Microbiology 4
WET-242 Hydraulics/Water & Wastewater 3
WET-245 Instrumentation & Control 4
WET-280 Water & Environmental Projects II 5

WINTER TERM

GIS-201 Introduction to Geographic Information System 3
MTH-095 Algebra III or MTH-111 College Algebra 4-5
— — Speech elective (Recommended: COMM-111) 3-4

SPRING TERM

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

Credits required for degree 92-98

WATER & ENVIRONMENTAL TECHNOLOGY SUGGESTED GENERAL ELECTIVES

COURSE

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

PROFESSIONAL UPGRADE COURSES

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

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CEU/CREDITS</th>
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</thead>
<tbody>
<tr>
<td>WET-009</td>
<td>Certification Review/Wastewater Operators (CEU)</td>
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<tr>
<td>WET-009</td>
<td>Certification Review/Waterworks Operators (CEU)</td>
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<tr>
<td>WET-009</td>
<td>Cross Connect, Backflow Assembly Tester (4.0 CEU)</td>
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<tr>
<td>WET-009</td>
<td>Cross Connection Specialist Course (3.2 CEU)</td>
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<tr>
<td>WET-009</td>
<td>Equipment Maintenance &amp; Repair (CEU)</td>
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<td>WET-009</td>
<td>Pretreatment (CEU)</td>
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<tr>
<td>WET-009</td>
<td>Water &amp; Wastewater Short Schools (2.1 &amp; 2.3 CEU)</td>
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<tr>
<td>WET-010</td>
<td>Wastewater Operations I 3 credits</td>
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<tr>
<td>WET-011</td>
<td>Waterworks Operations I 3 credits</td>
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<tr>
<td>WET-020</td>
<td>Wastewater Operations II 3 credits</td>
</tr>
<tr>
<td>WET-021</td>
<td>Waterworks Operations II 3 credits</td>
</tr>
<tr>
<td>WET-030</td>
<td>Wastewater Operations III 3 credits</td>
</tr>
<tr>
<td>WET-031</td>
<td>Water Treatment 3 credits</td>
</tr>
</tbody>
</table>

HIGH PURITY WATER CERTIFICATE

* Professional Upgrade

The High Purity Water certificate program provides classes and hands-on experience with advanced water treatment methods used in the high-tech industry. The certificate program has been developed in cooperation withIntel Corporation. Based on student demand WET-125 and WET-135 may be offered biannually.

PROGRAM OUTCOMES

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

CAREERS

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

For information contact Matthew LaForce, 503-594-3148 or laforce@clackamas.edu

<table>
<thead>
<tr>
<th>FALL TERM</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WET-245</td>
<td>Instrumentation &amp; Control 4</td>
</tr>
<tr>
<td>MTH-082E</td>
<td>Math for High Purity Water 1</td>
</tr>
<tr>
<td>WET-125</td>
<td>High Purity Water Production I 3</td>
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<th>WINTER TERM</th>
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<tr>
<td>ART-262</td>
<td>Digital Photography &amp; Photo-Imaging 3</td>
</tr>
<tr>
<td>CS-125H</td>
<td>HTML &amp; Web Site Design 3</td>
</tr>
<tr>
<td>CS-140</td>
<td>Introduction to Operating Systems 4</td>
</tr>
<tr>
<td>CS-150</td>
<td>Computer Technician Orientation 3</td>
</tr>
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<table>
<thead>
<tr>
<th>SPRING TERM</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>CS-135I</td>
<td>Advanced Web Design with Dreamweaver 3</td>
</tr>
<tr>
<td>CS-240L</td>
<td>Linux Administration 4</td>
</tr>
<tr>
<td>CS-234A</td>
<td>AJAX Web Development 3</td>
</tr>
<tr>
<td>CS-234P</td>
<td>PHP/MySQL Web Development 3</td>
</tr>
</tbody>
</table>

Web Design & Development

Associate of Applied Science Degree

The Web Design & Development program prepares students for technical positions related to web programming and design. This multidisciplinary program incorporates classes from computer science, art, English, and business. Course work includes computer graphics and design, web development with a focus on current industry standards, web server administration, data-driven web programming, multimedia and animation, and technical writing. Cooperative Work Experience (CWE) is supervised real-world employment that supplements the academic classroom environment.

PROGRAM REQUIREMENTS

Prerequisites for first term classes include completing course work for CS-120 Survey of Computing, WR-095 Paragraph to Essay, and MTH-060 Algebra I or placement in BA-131 Introduction to Business Computing, WR-121 English Composition and MTH-065 Algebra II. This is an open program. Students may take any class in the program for which they have completed the prerequisite.

PROGRAM OUTCOMES

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

CAREERS

Career opportunities may include web designer/consultant, webmaster, web programmer, web systems specialist, and graphic designer.

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

<table>
<thead>
<tr>
<th>FALL TERM</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART-225</td>
<td>Computer Graphics 3</td>
</tr>
<tr>
<td>CS-133S</td>
<td>Introduction to JavaScript &amp; Server Side Scripting 3</td>
</tr>
<tr>
<td>CS-179</td>
<td>Networking I 3</td>
</tr>
<tr>
<td>or CS-275</td>
<td>Database Design 3</td>
</tr>
<tr>
<td>CS-195</td>
<td>Flash Web Development 3</td>
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<table>
<thead>
<tr>
<th>WINTER TERM</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-135I</td>
<td>Advanced Web Design with Dreamweaver 3</td>
</tr>
<tr>
<td>CS-240L</td>
<td>Linux Administration 4</td>
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<td>CS-234A</td>
<td>AJAX Web Development 3</td>
</tr>
<tr>
<td>CS-234P</td>
<td>PHP/MySQL Web Development 3</td>
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</tbody>
</table>

Continued
Web Design & Development continued…

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

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

FALL TERM  CREDITS
ART-225  Computer Graphics II  3
CS-135DB  Microsoft Access  3
CS-280  Computer Science/CWE  3
WR-122  English Composition  4

WINTER TERM
CS-240W  Windows Desktop Administration  3
CS-275  Database Design  3
CS-280  Computer Science/CWE  3
WR-227  Technical Report Writing  4
— —  PE/Health requirement (see page 53)  1

SPRING TERM
ART-221  Flash Animation: Design & Techniques  3
ART-227  Computer Graphics III  3
BA-103  Business Strategies for Computer Consultants  3
CS-280  Web Server Administration  4
CS-297W  Website Capstone  3

Credits required for degree  95-96

Web Design

Certificate

The Web Design program should prepare students for technical positions related to web and graphic design. This multidisciplinary program incorporates classes from computer science and art. Course work includes a strong emphasis on computer graphics and design, data communications theory, operating systems, and web design with a focus on current industry standards. Cooperative Work Experience (CWE) is supervised real-world experience that supplements the academic classroom environment.

PROGRAM REQUIREMENTS
The Web Design program prepares students for technical positions related to web and graphic design. This multi-disciplinary program incorporates classes from computer science, English, and art. Course work includes a strong emphasis on computer graphics and design, data communications theory, operating systems, and web design with a focus on current industry standards. Cooperative Work Experience (CWE) is supervised real-world employment that supplements the academic classroom environment.

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

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

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

WEB DESIGN CERTIFICATE

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

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

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

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

Credits required for certificate  51-53
Welding Technology

Professional Upgrade

Certificate

Associate of Applied Science Degree

This program prepares students for entry into these industries: fabricated structural metal products, motor vehicles and equipment, construction and heavy construction, transportation equipment, ship and boat building and repair, aircraft and parts, self-employment and miscellaneous fabricated metal products.

CCC’s welding instructors are American Welding Society (AWS) certified professionals. The program’s curriculum is based on the AWS national standard for entry level welders.

Course work focuses on the knowledge and skills to perform:

- Fillet welds and groove welds using:
  - Shielded metal arc welding (SMAW)
  - Gas-metal arc welding (GMAW)
  - Flux-core arc welding (FCAW)
  - Gas-tungsten arc welding (GTAW)
  - Steel, stainless steel and aluminum
  - A variety of different electrodes
- Plasma arc cutting (PAC), air carbon arc cutting (CAC-A) and gouging, manual and automatic oxy-fuel cutting (OFC and OFC-Track Burner) processes
- Knowledge of materials science and welding theory
- Print reading, inspection, quality, safety and shop practices
- Fabrication techniques, including job cost calculations, layout, sketching, bills of material, fitting and cutting welding applied to real projects designed by industry partners

Program Outcomes

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

Careers

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

Short-Term Training

For students who need a quick-entry strategy into the work force, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information.

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

Welding Technology Certificate

First Term

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFG-107</td>
<td>Industrial Safety &amp; First Aid</td>
<td>3</td>
</tr>
<tr>
<td>MTH-050*</td>
<td>Technical Mathematics I</td>
<td>3</td>
</tr>
<tr>
<td>WLD-100</td>
<td>Welders' Print Reading</td>
<td>3</td>
</tr>
<tr>
<td>WLD-111</td>
<td>Shielded Metal Arc Welding (Stick)</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>or WLD-111A and WLD-111B Shielded Metal Arc Welding (Stick)</td>
<td></td>
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Second Term

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFG-109</td>
<td>Computer Literacy for Technicians</td>
<td>3</td>
</tr>
<tr>
<td>WLD-112</td>
<td>Introduction to Shielded Metal Arc Welding Pre-Pipe Welding</td>
<td>2</td>
</tr>
<tr>
<td>WLD-113</td>
<td>Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>or WLD-113A and WLD-113B Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)</td>
<td></td>
</tr>
<tr>
<td>WLD-200</td>
<td>Welders' Print Reading II</td>
<td>3</td>
</tr>
<tr>
<td>WR-101*</td>
<td>Communication Skills: Occupational Writing</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits Required: 53-56

Welding Technology

Associate of Applied Science Degree: 1st Year

Complete certificate program.

Welding Technology

Associate of Applied Science Degree: 2nd Year

Fourth Term

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MFG-111</td>
<td>Machine Tool Fundamentals I</td>
<td>3</td>
</tr>
<tr>
<td>WLD-211</td>
<td>Advanced Shielded Metal Arc Welding</td>
<td>4</td>
</tr>
<tr>
<td>WLD-250</td>
<td>Welding Fabrication I Beginning Project</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>PE/Health requirement (see page 53)</td>
<td>1-3</td>
</tr>
</tbody>
</table>

Fifth Term

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>WLD-210</td>
<td>Beginning Shielded Metal Arc Welding Pipe Welding</td>
<td>2</td>
</tr>
<tr>
<td>WLD-213</td>
<td>Advanced Gas Metal Arc Welding/Flux-Core Arc Welding</td>
<td>4</td>
</tr>
<tr>
<td>WLD-251</td>
<td>Welding Fabrication II Intermediate Project</td>
<td>4</td>
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<tr>
<td></td>
<td>General electives (any college level course)</td>
<td>3</td>
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</tbody>
</table>

Continued
SIXTH TERM
WLD-215 Advanced Gas Tungsten Arc Welding 4
WLD-252 Welding Fabrication III Advanced Project 4
WLD-280 Welding Technology/CWE 2
— — Welding Technology program elective 2-4

Credits required for degree 90-97

* Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

WELDING TECHNOLOGY PROGRAM ELECTIVES

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

Entry Level Welding Technician

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

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

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

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

ENTRY LEVEL WELDING TECHNICIAN CAREER PATHWAY CERTIFICATE

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>MFG-107 Industrial Safety &amp; First Aid</td>
<td>3</td>
</tr>
<tr>
<td>WLD-100 Welders’ Print Reading</td>
<td>3</td>
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<tr>
<td>WLD-250 Welding Fabrication I Beginning Project</td>
<td>4</td>
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<tr>
<td>— — Entry Level Welding Technician program electives</td>
<td>11-12</td>
</tr>
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</table>

Credits required for certificate 21-22

ENTRY LEVEL WELDING TECHNICIAN PROGRAM ELECTIVES

<table>
<thead>
<tr>
<th>COURSE</th>
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<tr>
<td>MFG-111 Machine Tool Fundamentals I</td>
<td>3</td>
</tr>
<tr>
<td>WLD-110 Welder Certification</td>
<td>1 or 4</td>
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<tr>
<td>WLD-111 Shielded Metal Arc Welding (Stick)</td>
<td>4 or 8</td>
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<tr>
<td>WLD-113 Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)</td>
<td>4 or 8</td>
</tr>
<tr>
<td>WLD-115 Gas Tungsten Arc Welding (GTAW)</td>
<td>4 or 8</td>
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</table>
## Course Descriptions

Visit Clackamas Community College on the web at [www.clackamas.edu](http://www.clackamas.edu)

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Description</th>
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<tr>
<td>AB</td>
<td>Collision Repair</td>
<td>123</td>
</tr>
<tr>
<td>ABE</td>
<td>Adult Basic Education</td>
<td>123</td>
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<tr>
<td>ABR</td>
<td>Collision Repair and Refinishing</td>
<td>123</td>
</tr>
<tr>
<td>AM</td>
<td>Automotive Service Technology</td>
<td>124</td>
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<tr>
<td>ANT</td>
<td>Anthropology</td>
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<td>ART</td>
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<td>ASC</td>
<td>Arts and Sciences</td>
<td>129</td>
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<tr>
<td>ASE</td>
<td>Adult High School Diploma</td>
<td>129</td>
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<tr>
<td>ASL</td>
<td>American Sign Language</td>
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<tr>
<td>BA</td>
<td>Business Administration</td>
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<td>BI</td>
<td>Biology</td>
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<td>BRI</td>
<td>Bridges</td>
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<td>BT</td>
<td>Business Technology</td>
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<tr>
<td>CAD/CDT</td>
<td>Computer-Aided Drafting</td>
<td>139</td>
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<td>CH</td>
<td>Chemistry</td>
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<td>CIV</td>
<td>Citizenship</td>
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<td>CJA</td>
<td>Criminal Justice</td>
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<tr>
<td>CLA</td>
<td>Clinical Laboratory Assistant</td>
<td>142</td>
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<tr>
<td>COMM</td>
<td>Communication Studies</td>
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<td>CS</td>
<td>Computer Science</td>
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<td>CWE</td>
<td>Cooperative Work Experience</td>
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<tr>
<td>DA</td>
<td>Dental Assistant</td>
<td>148</td>
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<tr>
<td>DMC</td>
<td>Digital Multimedia Communications</td>
<td>149</td>
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<tr>
<td>EC</td>
<td>Economics</td>
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<td>Early Childhood Education</td>
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<td>Education</td>
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<td>EET</td>
<td>Electronics Engineering Technology</td>
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Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Collision Repair

AB-101 Auto Restoration
3 credits, Fall/Winter/Spring/Summer
Designed for students interested in auto body repair and painting their own vehicles. Includes dent removal, panel replacement, welding and painting. May be repeated for up to 12 credits.

AB-112 Collision Repair Welding I
1-2 credits, Fall/Winter/Spring
Focus on auto collision damage repair. Emphasis is on Metal Inert Gas (MIG), Gas Metal Arc Welding (GMAW), welding on light gauge metals, oxygen-acetylene welding cutting and forming.

AB-113 Collision Repair I/Nonstructural
6 credits, Fall/Winter/Spring
Provides basic instruction in collision repairs, including shop safety and chemical hazard safety; proper safe use of tools; basic metal work and finishing; use of plastic filler; door removal, replacement and alignment; and replacement and alignment of bolt-on front end sheet metal parts. Required: Current enrollment in or successful completion of AB-112 and ABR-125.

AB-123 Collision Repair Welding II
2 credits, Fall/Winter/Spring
Training in light gauge metal repair: Gas Metal Arc Welding (GMAW). Plasma Arc Cutting (PAC), Squeeze Type Resistance Spot Welding (S-TRSW), and other advanced welding techniques specific to collision damage repair. Prerequisite: Pass AB-112.

AB-133 Collision Repair II/Structural
6 credits, Fall/Winter/Spring
Repair major body damage using modern frame and body repair equipment. Includes repair and replacement of bolt-on, bonded, and welded components using the latest technology. Includes introduction to computerized measuring and damage analysis. Prerequisite: AB-113.

AB-149 Collision Repair Estimating I
2 credits, Fall
Provides instruction in procedure and terminology used in the collision repair estimating field. Body part component identification and the effects of a collision on a vehicle will be studied.

AB-150 Collision Repair Computerized Estimating - Shoplink
2 credits, Winter
Provides detailed instruction in the use of modern computerized estimating systems in the collision repair field. Focus is on Shoplink software. Prerequisite: AB-149.

AB-151 Collision Repair Computerized Estimating - CCC ONE
2 credits, Spring
Provides detailed instruction in the use of modern computerized estimating systems in the collision repair field. Focus is on CCC ONE software. Prerequisite: AB-149.

AB-222 Collision Repair III/Advanced Structural
6 credits, Fall/Winter/Spring
Major collision repair with a systems approach: frame and structure, panels, suspension and brakes, electrical and cooling systems. Emphasis on frame and unibody repair, replacement of welded body panels, and diagnosis and repair of related damage. Prerequisite: AB-133.

AB-224 Collision Repair IV/Advanced Structural
6 credits, Fall/Winter/Spring
Advanced frame and unibody repair procedures. Electronic measurement and dimensioning, repair documentation, brakes suspension, and alignment as they relate to collision repair. Prerequisite: AB-222.

AB-226 Collision Repair V/Advanced Structural
6 credits, Fall/Winter/Spring
Uses the latest high quality, productive techniques and equipment to repair vehicles to pre-collision condition. Covers the refined collision repair processes for today’s workplace. Prerequisite: AB-224.

AB-235 Collision Repair Welding III
2 credits, Winter/Spring
Aluminum welding for collision damage repair. Gas Metal Arc Welding (GMAW) and Gas Tungsten Arc Welding (GTAW) processes are covered along with related weld repair techniques and equipment/safety procedures. Prerequisite: AB-123.

AB-280 Collision Repair/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. Work-based learning experience in an auto body repair shop. Required: Instructor consent & a CWE seminar.

ABE

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

Adult Basic Education

ABE-012 Adult Basic Education
0 credit, Fall/Winter/Spring/Summer
Instruction offered to improve reading, writing, and math skills. Individual schedules are arranged. Students must be 16 years or older. Required: Instructor consent.

ABR

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

Collision Repair and Refinishing

ABR-125 Collision Repair/Refinishing I
6 credits, Fall/Winter/Spring
Covers shop safety, fire prevention, selection and use of paint products, abrasives, fillers, basic application of top coats, primers and sealers. Required: Current enrollment in or successful completion of AB-112, and AB-113.
ABR-127 Collision Repair/Refinishing II
6 credits, Fall/Winter/Spring
Application of solvent and waterborne finishes, including spot repairs, color matching, complete refinishing, and problem solving. Introduction to computerized color information retrieval and mixing. Prerequisite: ABR-125.

ABR-129 Collision Repair/Refinishing III
6 credits, Fall/Winter/Spring
Application of solvent and waterborne basecoats and tri-coats and urethane topcoats, using both foreign and domestic refinish systems. Includes complete refinishing, spot and panel painting, color matching and problem solving. Prerequisite: ABR-127.

ABR-142 Airbrush Art
2 credits, Fall
Includes origination or repair of automotive art, murals, lettering, logos, etc. Techniques may be applied to signage and manicurist projects. Topics include airbrush selection and maintenance, layouts and masking, colors and blending.

ABR-152 Custom Painting Fundamentals
2 credits, Spring
Custom color application and special effects. Covers personal protection, shop safety, environmental concerns, product choice and compatibility, selection and use of masking materials, and color harmony.

ABR-162 Basic Automotive Pinstriping
2 credits, Winter
Matching factory striping colors and patterns. Designing and applying custom designs. Integrating striping into graphic designs. Covers necessary materials and tools.

ABR-180 Collision Refinishing/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. Work-based learning experience in an auto refinishing shop. Required: Instructor consent & a CWE seminar.

ABR-225 Production Shop Techniques
6 credits, Fall/Winter/Spring
Designed for students who wish to gain additional hands-on experience in refinishing, using the most up-to-date methods and materials. Prerequisite: ABR-129.

ABR-227 Restoration Practices
6 credits, Fall/Winter/Spring
Designed for students who wish to broaden their skills base in the upper end refinishing market. Projects will be more challenging, with standards and expectations set higher. Prerequisite: ABR-225.

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

Automotive Service Technology

AM-106 Fix Your Own Car
2 credits, not offered every term
A do-it-yourself course for non-automotive majors who wish to work on their own cars. Includes: oil change, lubrication, fluid checks, brakes, cooling system, electrical system, safety, and other quick services. May be repeated for up to 12 credits.

AM-121 General Auto Repair I
3 credits, Fall/Winter/Spring
Course material is coordinated with other auto courses. Includes live repair work and fundamentals such as safety, tools, measuring, and fasteners. For first term automotive students. Required: Current enrollment in or successful completion of: AM-129, AM-130, AM-131, AM-133, AM-224 or AM-235.

AM-122 General Auto Repair II
3 credits, Fall/Winter/Spring
Course material is coordinated with other auto courses. Includes live repair work and fundamentals such as safety, tools, measuring, and fasteners. For second term automotive students. Prerequisite: AM-121.

AM-123 General Auto Repair III
3 credits, Fall/Winter/Spring
Course material is coordinated with other auto courses. Includes live repair work and fundamentals such as safety, tools, measuring, and fasteners. For third term automotive students. Prerequisite: AM-122.

AM-129 Electrical Systems
7 credits, Fall
Includes General Electrical System Diagnosis; Battery Diagnosis and Repair; Charging System Diagnosis and Repair; Lighting Systems Diagnosis and Repair; Ignition System Diagnosis and Repair. Prerequisite: Pass MTH-020 or placement in MTH-050, pass RD-080 or placement in RD-090.

AM-130 Brake Systems
7 credits, Fall
Theory and lab course covers basic hydraulics, brake fluids, friction material, seals, disc and drum brakes, disc and drum brake servicing equipment, hydraulic and vacuum brake boosters and anti-lock braking systems. Prerequisite: Pass MTH-020 or placement in MTH-050, pass RD-080 or placement in RD-090.

AM-131 Chassis Systems
7 credits, Spring
A course in engine repair. Includes design, construction, service, and repair of front and rear suspension systems, wheels and tires, steering systems, and alignments. Prerequisite: Pass MTH-020 or placement in MTH-050, pass RD-080 or placement in RD-090.

AM-133 Engine Systems
3 credits, Fall/Winter/Spring
Lab course for currently enrolled automotive students wishing to specialize in specific areas of automotive repair. Required: Instructor consent.

AM-185 Advanced Mechanic Studies II
3 credits, Fall/Winter/Spring
Lab course for currently enrolled automotive students wishing to specialize in specific areas of automotive repair. Required: Instructor consent.
AM-195 Advanced Mechanic Studies III  
3 credits, Fall/Winter/Spring  
Lab course for currently enrolled automotive students wishing to specialize in specific areas of automotive repair. Required: Instructor consent.

AM-224 Comfort Systems  
4 credits, Spring  
Covers design, construction, testing, maintenance, and repair of automotive heating and air conditioning systems. Prerequisite: Pass MTH-020 or placement in MTH-050, pass RD-080 or placement in RD-090.

AM-228 Service Shop Management  
4 credits, Spring  
Course designed to familiarize students with the responsibilities of the parts manager, service manager and service writer. Prerequisite: Pass MTH-020 or placement in MTH-050, pass RD-080 or placement in RD-090.

AM-235 Power Transmission Systems  
7 credits, Spring  
Covers construction, operation, service and repair of clutches, manual transmissions, U-joints, drive lines, final drives, overdrive, and four wheel drives. Prerequisite: Pass MTH-020 or placement in MTH-050, pass RD-080 or placement in RD-090.

AM-243 Fuel & Emission Control Systems  
7 credits, Winter  
Covers service of fuel storage and delivery systems: fuel injection, emission controls, and other electronic engine controls. Includes DSO use and exhaust gas analysis. Prerequisite: Pass AM-129 with a C or better.

AM-244 Advanced Electrical Systems  
7 credits, Winter  
Includes an in-depth study of systems that affect engine performance and information on computerized diagnostic equipment. Covers diagnosis/repair of accessory systems, supplemental restraint systems and advanced diagnosis of electrical/electronic systems. Prerequisite: Pass AM-129 with a C or better.

AM-245 Automatic Transmission Systems  
7 credits, Fall  
Provides students with knowledge of theory and physical description of the automatic transmission. The student will have the opportunity to acquire practical experience and learn the proper procedures for overhaul and service. Prerequisite: Pass AM-129 with a C or better.

AM-280 Auto Mechanics/CWE  
2-6 credits  
Fall/Winter/Spring/Summer  
Cooperative work experience. Work-based learning experience in an auto repair shop or auto dealership. Required: Instructor consent & a CWE seminar.

ANT  
Anthropology  
ANT-101 Physical Anthropology  
4 credits, not offered every term  
Introduces the study of humans as biocultural beings in the context of modern genetics, evolutionary theory, primate taxonomy, anatomy and behavior, fossil hominines, and the role of the physical anthropologist in forensic science. Recommended: Pass RD-090 or placement in RD-115.

ANT-102 Archaeology & Prehistory  
4 credits, not offered every term  
Introduces the methods used by archaeologists to study the development of human cultures. Provides a survey of world prehistory, tracing the transition of human societies from hunting and gathering to farming, to the beginning of urban life and the rise of early civilizations. Recommended: Pass RD-090 or placement in RD-115.

ANT-103 Cultural Anthropology  
4 credits, not offered every term  
Introduces the diversity of contemporary human cultures and the ways anthropologists study and compare them in an effort to understand how different societies organize their lives and make sense of the world around them. Explores the inter-relationships among the various elements of culture. Recommended: Pass RD-090 or placement in RD-115.

ANT-231 Indians of the Pacific Northwest  
4 credits, not offered every year  
Survey of Native American cultures in the Pacific Northwest region from prehistoric times to the present. Course is based on archeological, ethno-historical, and ethnographic evidence. Includes contemporary issues in Northwest Native American life. Recommended: Pass RD-090 or placement in RD-115.

ANT-232 Indians of North America  
4 credits, not offered every year  
A broad survey of the cultures, arts, and history of Native Americans north of Mexico. Uses archaeological, ethno-historical, and ethnographic evidence to explore the diversity of Native American cultures from prehistoric times to the present. Includes contemporary issues in Native American life. Recommended: Pass RD-090 or placement in RD-115.

ANT-280 Anthropology/CWE  
2-6 credits, Fall/Winter/Spring  
Cooperative work experience. Provides students with on-the-job work experience in the field of anthropology and/or archaeology. Required: Instructor consent & a CWE seminar.

ART  
Art  
ART-100A Jewelry Making Techniques  
1 credit, not offered every term  
Various topics will introduce techniques in: construction, forming, fabrication, soldering, inlay, etching, mold making, casting, stone setting and silversmithing. Students will be encouraged to create and design their own jewelry with both meaning and function. Historical and contemporary issues surrounding jewelry and body adornment will be presented and discussed during the course. May be repeated for up to 3 credits.
ART-100B Ceramic Making Techniques
1 credit, not offered every term
Various topics will introduce techniques in clay construction, firing, glazing and other ceramic methods. Students will be encouraged to create and design their own work using clay and clay materials which consider meaning and function. Historical and contemporary issues related to ceramics will be presented and discussed. May be repeated for up to 3 credits.

ART-101 Art Appreciation
3 credits, Fall
Discover the fundamentals of thinking about and creating art through readings, class discussions, art projects and gallery/museum tours. This course will examine history, ideas and issues associated with art making and culture from ancient to 20th century.

ART-102 Art Appreciation
3 credits, Winter
Discover the fundamentals of thinking about and creating art through readings, class discussions, art projects and gallery/museum tours. This course will examine current history, culture, ideas and issues associated with art and culture. Focus on modern and contemporary art.

ART-103 Art Appreciation
3 credits, Spring
Discover the fundamentals of thinking about and creating art through readings, class discussions, art projects and gallery/museum tours. This course will examine history, culture, ideas and issues associated with art making and culture. Focus on the formalism of art, architecture and design.

ART-106 Animation & Motion Graphics I
3 credits, Fall/Winter
Introduction to the fundamentals of animation and motion graphics design. This project-based course will explore experimental and new technological approaches to creating digital effects and animation for video and web-based applications. Students will learn the basics of Adobe After Effects. Previous experience with computer graphics and digital video is recommended. Recommended: ART-221, ART-225, ART-226, DMC-104.

ART-107 Animation & Motion Graphics II
3 credits, Winter/Spring
This project-based course will explore intermediate aspects of experimental and new technological approaches to creating digital effects and animation for video and web-based applications. Students will learn intermediate aspects of After Effects to create successful motion graphics projects. Previous experience with computer graphics and digital video is recommended. Prerequisite: ART-106/DMC-106. Recommended: ART-221, ART-225, ART-226, DMC-104.

ART-108 Animation & Motion Graphics III
3 credits, Spring
Continuation of the process of animation and motion graphics design. This project-based course will explore advanced aspects of experimental and new technological approaches to creating digital effects and animation for video and web-based applications. Previous experience with computer graphics and digital video is recommended. Students will learn advanced aspects of After Effects to create successful motion graphics projects. Prerequisite: ART-107/DMC-107. Recommended: ART-221, ART-225, ART-226, DMC-104.

ART-115 Basic Design: Two Dimensional Design
4 credits, Fall
Acquaint students with the vocabulary of composition and the elements and principles of design. Develop creative composition and analytical skills through projects and critiques. Examine historical and contemporary issues and ideas related to visual composition.

ART-116 Basic Design: Color Theory & Composition
4 credits, Winter
Explore the use of color in art. Create charts, paintings and collages that investigate the elements, principles and theory of color. Examine historical and contemporary issues and ideas of color and composition in the arts.

ART-117 Basic Design: Three Dimensional Composition
4 credits, not offered every term
Examine the elements of form, space, structure and sculpture. Create works of art using various sculptural processes. Historical and contemporary issues and ideas relating to sculpture and 3-dimensional design.

ART-131 Drawing
4 credits, Fall
Introduces drawing tools, materials, techniques, elements of composition; line, gesture, color and value. Assignments involve observational drawing and its relationship to volume and form on a two-dimensional plane. Assignments include drawings, assigned readings, term papers and group critiques of drawing projects. Historical issues of drawing will be examined.

ART-132 Drawing
4 credits, Winter
Introduces drawing tools, materials, techniques, elements of composition; line, gesture, color and value. Assignments involve observational drawing and its relationship to volume and form on a two-dimensional plane. Assignments include drawings, assigned readings and group critiques of drawing projects. This course emphasizes the human form.

ART-133 Drawing
4 credits, Spring
Introduces drawing tools, materials, techniques, elements of composition; line, gesture, color and value. Assignments involve observational drawing and its relationship to volume and form on a two-dimensional plane. Assignments include drawings, assigned readings and group critiques of drawing projects. This course emphasizes space, perspective and composition.

ART-161 Photography I
3 credits, Fall/Winter/Spring
Introduction to basic camera operation and darkroom processes in developing and printing film. Elements of composition, content, and historical reference will be explored. Required: 35mm camera with adjustable exposure controls.
ART-162 Photography II  
3 credits, Winter/Spring  
Continuation of the exploration of camera operation and darkroom processes in developing and printing film. Elements of composition, content, and historical reference will be explored. Prerequisites: Pass ART-161 or instructor consent. Required: 35mm camera with adjustable exposure controls.

ART-172 History of Western Art  
4 credits, Winter  
Examines art, culture, and history from the Paleolithic era through the Renaissance. This is a broad overview of art history that promotes an understanding of art and its history through readings, lectures, papers and exams. Students must be able to write brief research papers. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ART-194 Watercolor Painting  
3 credits, not offered every term  
Beginning level study and practice course focused on individual exploration in technique and application of watercolor painting. Skill development in: preparation, creative expression, and presentation with the transparent medium of watercolor.

ART-197 Gallery Design & Management  
3 credits, not offered every term  
Introduction to the fundamental goals and methodology of managing a visual arts gallery. This course examines issues of contemporary art while providing practical experience in curating, preparation and installation of exhibitions, fund raising, grant writing, public relations and related gallery objectives.

ART-204 History of Western Art  
4 credits, Fall  
Examines art, culture, and history from the Paleolithic era through the Byzantine style. This is a broad overview of art history that promotes an understanding of art and its history through readings, lectures, papers and exams. Students must be able to write brief research papers. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ART-205 History of Western Art  
4 credits, Winter  
Examines art, culture, and history from the Medieval Era through the Renaissance. This is a broad overview of art history that promotes an understanding of art and its history through readings, lectures, papers and exams. Students must be able to write brief research papers. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ART-206 History of Western Art  
4 credits, Spring  
Examines art, culture, and history from the Baroque period through the current century. This is a broad overview of art history that promotes an understanding of art and its history through readings, lectures, papers and exams. Students must be able to write brief research papers. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ART-211 Flash Animation: Design & Techniques  
3 credits, Winter/Spring  
Introduces the principles of animation using Adobe’s Flash software. The course will emphasize design principles, analytical skills and creativity. Students will learn the basics of Flash in order to create successful animated projects.

ART-221 Flash Animation: Design & Techniques  
3 credits, not offered every Spring  
Covers advanced principles of animation using Adobe Flash and other software. The course will emphasize professional workflow and techniques of animation production for multimedia platforms. Prerequisites: Pass ART-221, or instructor consent.

ART-225 Computer Graphics I  
3 credits, Fall/Winter/Spring  
Introduction to the use of digital graphics programs. Photo manipulation, illustration, and compositing techniques will be explored. Design principles and creative composition will be emphasized. Historical and contemporary issues related to graphic design aesthetics will be considered. Recommended: Pass ART-115.

ART-226 Computer Graphics II  
3 credits, Fall/Winter/Spring  
Continue exploring the processes of digital graphics programs. More advanced aspects of image compositing, bit mapping, layering, and using channels in Photoshop. More advanced aspects of vector graphics creation and document creation in Illustrator and InDesign. Creative problem solving, design applications and contemporary issues will be explored. Historical reference and current trends in digital media will continue to be examined. Recommended: Pass ART-225.

ART-227 Computer Graphics III  
3 credits, Spring  
Advanced use of multimedia applications to create images, compositions, and documents. Develop a design portfolio. Design principles, creative problem solving, historical and contemporary issues in graphics, and aesthetics will be analyzed. Recommended: Pass ART-225 and ART-226.

ART-250 Ceramics/Beginning  
4 credits, Fall  
Broad general background in ceramics. Explore methods of working with clay including pinching, coiling, slab construction, and throwing on the wheel. Introduction to glazing and firing methods. Research into the ancient history of ceramics. Develop fundamental skills to foster artistic growth.

ART-251 Ceramics/Beginning  
4 credits, Winter  
Broad general background in ceramics. Explore methods of working with clay including pinching, coiling, slab construction, and throwing on the wheel. Introduction to glazing and firing methods. Research into ceramics from the 10th to the 19th centuries. Develop fundamental skills to foster artistic growth.

ART-252 Ceramics/Beginning  
4 credits, Spring  
Broad general background in ceramics. Explore methods of working with clay including pinching, coiling, slab construction, and throwing on the wheel. Introduction to glazing and firing methods. Research into contemporary and historical ceramics. Develop fundamental skills to foster artistic growth.
ART-253 Ceramics/Intermediate 4 credits, Fall
Further develop skills and ideas to foster artistic growth. Explore working with clay: pinching, coiling, slab construction and throwing on the wheel. Continue to learn about glazing and firing. Research contemporary and historical ceramics. Prerequisites: Pass ART-250, ART-251 and ART-252 or instructor consent.

ART-254 Ceramics/Intermediate 4 credits, Winter
Further develop skills and ideas to foster artistic growth. Explore working with clay: pinching, coiling, and slab construction and throwing on the wheel. Continue to learn about glazing and firing. Research contemporary and historical ceramics. Prerequisites: Pass ART-250, ART-251 and ART-252 or instructor consent.

ART-255 Ceramics/Intermediate 4 credits, Spring
Further develop skills and ideas to foster artistic growth. Explore working with clay: pinching, coiling, and slab construction and throwing on the wheel. Continue to learn about glazing and firing. Research contemporary and historical ceramics. Prerequisites: Pass ART-250, ART-251 and ART-252 or instructor consent.

ART-262 Digital Photography & Photo-Imaging 3 credits, Fall/Winter/Spring
Introduces concepts, techniques, practices, aesthetics and ethics of photographic imaging and image-making with digital technology. Students will use Adobe Photoshop software. Prerequisite: Pass CS-090 or placement in CS-120 or instructor consent.

ART-277 Welding: Metal Sculpture 2 credits, not offered every term
Examines basic issues of historical and contemporary visual art while providing practical hands-on experience in the craft and process of welding, metal fabricating, and casting. Emphasis will be placed on the development and completion of individual student projects which utilize the tools and processes of manipulating metal.

ART-280 Art/CWE 2-6 credits, Fall/Winter/Spring
Cooperative work experience. Provides students with on-the-job work experience in the field of art. Required: Instructor consent & a CWE seminar.

ART-281 Painting/Beginning 4 credits, Fall
Introduces basic painting tools, materials, techniques, and elements of composition, color, gesture, and value. Direct observation of reality in relation to volume and form on a two-dimensional plane. Assignments include paintings, readings and critique of projects.

ART-282 Painting/Beginning 4 credits, Winter
Introduces basic painting tools, materials, techniques, and elements of composition, color, gesture, and value. Direct observation of reality in relation to volume and form on a two-dimensional plane. Assignments include paintings, readings and critique of projects.

ART-283 Painting/Beginning 4 credits, Spring
Introduces basic painting tools, materials, techniques, and elements of composition, color, gesture, and value. Direct observation of reality in relation to volume and form on a two-dimensional plane. Assignments include paintings, readings and critique of projects.

ART-284 Painting/Intermediate 4 credits, Fall
Utilizes advanced painting concepts, materials, and techniques with emphasis on composition, color, gesture, and value. Problems deal with observation of reality in relation to volume and form on a two-dimensional plane. Assignments include paintings, readings and critique of projects. Prerequisites: ART-283 or instructor consent.

ART-285 Painting/Intermediate 4 credits, Winter
Utilizes advanced painting concepts, materials, and techniques with emphasis on composition, color, gesture, and value. Problems deal with observation of reality in relation to volume and form on a two-dimensional plane. Assignments include paintings, readings and critique of projects. Prerequisites: ART-283 or instructor consent.

ART-286 Painting/Intermediate 4 credits, Spring
Utilizes advanced painting concepts, materials, and techniques with emphasis on composition, color, gesture, and value. Problems deal with observation of reality in relation to volume and form on a two-dimensional plane. Assignments include paintings, readings and critique of projects. Prerequisites: ART-283 or instructor consent.

ART-291 Sculpture 4 credits, Fall
Introduction to the processes and concepts of sculpture; the elements of form and space will be explored. Clay, plaster, mold making, carving, human form, and assemblage will be introduced. Reference to historical and aesthetic content will be presented.

ART-292 Sculpture 4 credits, Winter
Explores the human form in traditional and contemporary techniques and concepts. Use of armatures, combining media, and flexible molds will be explored. Concepts of aesthetics in formal composition will be explored through projects, lectures, and critiques. Historical reference will be explored.

ART-293 Sculpture 4 credits, Spring
Examines the processes and concepts of sculpture; the elements of form, space and visual communication will be examined with emphasis on current concerns. Clay, plaster, mold making, welding, carving, human form and assemblage will be explored. Reference to historical and contemporary aesthetic content will be presented.
ASC

Arts and Sciences

See also General Science (GS).

ASC-200 Integrated Science Inquiry
4 credits, Fall
An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrating themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included Evolution: the idea that shocked the World, the People and Animals of Africa, and the Lewis and Clark Expedition. Recommended: Pass WR-095 or placement in WR-121.

ASC-201 Integrated Science Inquiry
4 credits, Winter
An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrating themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included Human Evolution, Diseases of Africa, and the Lewis and Clark Expedition. Recommended: Pass WR-095 or placement in WR-121.

ASC-202 Integrated Science Inquiry
4 credits, Spring
An introductory laboratory course for liberal arts majors emphasizing an evolutionary approach to major topics in science through the use of integrating themes. The themes focus on the scientific discoveries and people that shape our understanding of the world. The course emphasizes an interdisciplinary perspective on science, collaborative scientific investigations and critical thinking. Themes have included Evolution & Contemporary Issues, Africa, and the Lewis and Clark Expedition. Recommended: Pass WR-095 or placement in WR-121.

ASE

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

Adult High School Diploma

ASE-010 Basic Math
.5 high school credit
Fall/Winter/Spring/Summer
Math concepts: addition, subtraction, multiplication, division of whole numbers, fractions and decimals; percentage; measurement; graphs; ratio/proportion; basic principles of algebra and geometry. Course is geared to those students who may need a slower-paced approach. Elective credit only for high school diploma requirement. Required: Instructor consent. May be repeated for up to 1.5 credits.

ASE-011 Applied Math I
.5 high school credit
Fall/Winter/Spring/Summer
Presents the use of the numbers and operations of arithmetic while basic algebra and geometry are integrated throughout the course. The use of up-to-date technology is integrated. A scientific calculator is required. Required: Instructor consent.

ASE-012 Applied Math II
.5 high school credit
Fall/Winter/Spring/Summer
Presents the use of numbers and operations of arithmetic while integrating algebraic and geometric concepts throughout the course. The use of algebra and geometry are integrated throughout the course. The use of a scientific calculator is required. Required: Instructor consent.

ASE-015 Basic English
.5 high school credit
Fall/Winter/Spring/Summer
Review of English fundamentals of grammar, spelling, capitalization, and punctuation. Required: Instructor consent. May be repeated for up to 1.5 high school credits.

ASE-016 Intermediate English
.5 high school credit
Fall/Winter/Spring/Summer
Review of capitalization, punctuation, and spelling, with emphasis on paragraph construction. Includes practical applications of sentence patterns, subject and verb agreement, and other writing skills. Required: Instructor consent.

ASE-017 Advanced English
.5 high school credit
Fall/Winter/Spring/Summer
Language arts course emphasizing grammar, sentence structure, style, clarity, logic, organization, and paragraph composition. Emphasis on transition from paragraph to essay. Required: Instructor consent.

ASE-020 Literature I
.5 high school credit
Fall/Winter/Spring/Summer
Course focuses on literature from the 17th-19th centuries, including the elements and examples of prose, poetry, and drama that produce good literature. Required: Instructor consent.

ASE-026 Health I
.5 high school credit
Fall/Winter/Spring/Summer
Presents issues impacting psychosocial health; applies prevention and risk-reduction concepts to health related problems. Determines the impact of behaviors that pose a threat to healthy living. Required: Instructor consent.

ASE-028 Global Studies I
.5 high school credit
Fall/Winter/Spring/Summer
Focuses on geographic tools (maps, globes, charts, graphs) to explain and analyze geographical relationships and area. Identifies areas and physical features that have impacted historical and modern issues and events. Required: Instructor consent.

ASE-029 Global Studies II
.5 high school credit
Fall/Winter/Spring/Summer
Focuses upon examination, prediction, and critical evaluation of the interrelationships among social, cultural, historical, economic, and environmental processes that change the characteristics of places and regions throughout the globe over time. Required: Instructor consent.
ASE-032 US History I
.5 high school credit
Fall/Winter/Spring/Summer
Focuses on the settlement of America to 1900, emphasizing the development of economic, political and social systems. Analyzes causes and effects of wars and domestic and foreign policy and examines the growth of technology. Required: Instructor consent.

ASE-033 US History II
.5 high school credit
Fall/Winter/Spring/Summer
Focuses on the settlement of America from 1890 to the present, emphasizing the development of economic, political and social systems. Analyzes causes and effects of wars and domestic and foreign policy, and examines the growth of technology. Required: Instructor consent.

ASE-034 Government I
.5 high school credit
Fall/Winter/Spring/Summer
Introduction to the basic principles of American government, including the branches of federal, state, and local government and how they interact. Required: Instructor consent.

ASE-035 Careers I
.5 high school credit
Fall/Winter/Spring/Summer
Students explore skills, interests, and related careers. Presents job search, acquisition, and retention strategies; defines appropriate workplace behaviors, and analyzes workplace problems in context. Required: Instructor consent.

ASE-036 Personal Finance I
.5 high school credit
Fall/Winter/Spring/Summer
Presents skills to promote realistic financial patterns, use techniques for personal income planning, record keeping, use of credit, purchase goods/services, and rights and responsibilities in the marketplace. Students acquire basic technology skills. Required: Instructor consent.

ASE-037 Basic Developmental Reading
.5 high school credit
Fall/Winter/Spring/Summer
Develops basic reading skills, including phonics, pronunciation, spelling, word attack skills, basic vocabulary, and comprehension skills. Elective high school credit only for high school diploma requirements. Required: Instructor consent.

ASE-038 Intermediate Reading
.5 high school credit
Fall/Winter/Spring/Summer
Word attack, vocabulary, spelling, and reading comprehension skills to improve basic reading abilities and textbook reading strategies. Required: Instructor consent.

ASE-039 Advanced Reading
.5 high school credit
Fall/Winter/Spring/Summer
Develops advanced vocabulary, reading comprehension skills, critical reading, and study skills. Required: Instructor consent.

ASE-040 Social Science
.5 high school credit
Fall/Winter/Spring/Summer
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-041 AHSD Life Experience Assessment
.5 high school credit
Fall/Winter/Spring/Summer
Assists student in documenting actual life experiences, which are then assessed toward meeting credit requirements for an Adult High School Diploma. May be repeated for up to 2 high school credits. Required: Instructor consent.

ASE-042 Cooperative Work Experience
.5-1.5 high school credits
Fall/Winter/Spring/Summer
Provides instruction in the areas of parent education and life skills targeted to the issues of teen parents and high school students. This course will assist students in developing positive parenting skills, understanding child development, applying appropriate practices for various developmental stages, building self-esteem, improving personal communication skills and developing survival skills. May be repeated for up to 2 high school credits. Required: Instructor consent.

ASE-043 Physical Education 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-044 American Civics II
.5 high school credit
Fall/Winter/Spring/Summer
Provides instruction in the areas of parent education and life skills targeted to the issues of teen parents and high school students. This course will assist students in developing positive parenting skills, understanding child development, applying appropriate practices for various developmental stages, building self-esteem, improving personal communication skills and developing survival skills. May be repeated for up to 2 high school credits. Required: Instructor consent.

ASE-046 Human Development
.5 high school credit
Fall/Winter/Spring/Summer
Provides instruction in the areas of parent education and life skills targeted to the issues of teen parents and high school students. This course will assist students in developing positive parenting skills, understanding child development, applying appropriate practices for various developmental stages, building self-esteem, improving personal communication skills and developing survival skills. May be repeated for up to 2 high school credits. Required: Instructor consent.

ASE-047 Physical Education I
.5 high school credit
Fall/Winter/Spring/Summer
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.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASE-056</td>
<td>Personal Finance II</td>
<td>.5</td>
<td>Fall/Winter/Spring/Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ASE-057</td>
<td>Careers II</td>
<td>.5</td>
<td>Fall/Winter/Spring/Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ASE-058</td>
<td>Physical Education II</td>
<td>.5</td>
<td>Fall/Winter/Spring/Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ASE-059</td>
<td>Health II</td>
<td>.5</td>
<td>Fall/Winter/Spring/Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ASE-061</td>
<td>General Science/Life Science</td>
<td>.5</td>
<td>Fall</td>
<td>Presents principles of habitat, habitat management, and wildlife science in a hands-on environment. Explores concepts of endangered species and extinction, adaptations and natural selection, life cycles, food webs, habitat, and wildlife laws. Required: Instructor consent.</td>
</tr>
<tr>
<td>ASE-063</td>
<td>General Science/Wildlife</td>
<td>.5</td>
<td>Spring</td>
<td>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.</td>
</tr>
<tr>
<td>ASE-066</td>
<td>Word Processing/Spreadsheet Applications</td>
<td>.5</td>
<td>Fall/Winter/Spring/Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ASE-067</td>
<td>E-mail/Internet/Personal Applications</td>
<td>.5</td>
<td>Fall/Winter/Spring/Summer</td>
<td>Discusses issues and debates concerning technology in a global society. Required: Instructor consent.</td>
</tr>
<tr>
<td>ASE-068</td>
<td>Literature II</td>
<td>.5</td>
<td>Fall/Winter/Spring/Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ASE-071</td>
<td>Algebra I</td>
<td>.5</td>
<td>Fall/Winter/Spring/Summer</td>
<td>Major topics (in an integrated approach) include the use of variables, multiplication in algebra, addition in algebra, and subtraction in algebra. Required: Instructor consent.</td>
</tr>
<tr>
<td>ASE-072</td>
<td>Algebra II</td>
<td>.5</td>
<td>Fall/Winter/Spring/Summer</td>
<td>Major topics (in an integrated approach) include linear sentences, division in algebra, slopes and lines, exponents, quadratic equations, and linear systems. Required: Instructor consent.</td>
</tr>
<tr>
<td>ASE-086</td>
<td>General Science/Birds</td>
<td>.5</td>
<td>Fall/Winter/Spring/Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ASE-087</td>
<td>Physical Science: Exploring The Nardoo</td>
<td>.5</td>
<td>Fall/Winter/Spring/Summer</td>
<td>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.</td>
</tr>
</tbody>
</table>
ASL

American Sign Language

ASL-101 American Sign Language I
4 credits, Fall
First of a three-term introductory course. Everyday communication is the centerpiece of each lesson. Topics revolve around sharing information about ourselves and our environment. Grammar is introduced in context, with an emphasis on developing question and answering skills. Strategies are presented to help the student maintain a conversation. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ASL-102 American Sign Language II
4 credits, Winter
Second of a three-term introductory course. Emphasis will be on increasing communicative abilities. Course will focus on language functions such as making requests, describing others, and/or telling a short story. Grammar and vocabulary will also be emphasized throughout the course. Prerequisite: Pass ASL-101 or instructor consent.

ASL-103 American Sign Language III
4 credits, Spring
Third of a three-term introductory course. Emphasis will be on developing conversational competence. Course includes basic ASL vocabulary and grammar used for basic communication such as opening conversations, clarifying, giving reasons, narrating family history, correcting, and elaborating. Prerequisite: Pass ASL-102 or instructor consent.

ASL-201 Second-Year American Sign Language I
4 credits, Fall
Review and expansion of American Sign Language vocabulary and structure in order to perfect expressive skills. Emphasizes active communication in sign language. Prerequisite: Pass ASL-103 or instructor consent.

ASL-202 Second-Year American Sign Language II
4 credits, Winter
Continuation of ASL-201. Emphasizes active communication in sign language. Increased emphasis on exploring, analyzing the rules, and presenting stories and literature in sign language. Prerequisite: Pass ASL-201 or instructor consent.

ASL-203 Second-Year American Sign Language III
4 credits, Spring
Continuation of ASL-202. Emphasizes active communication in sign language. Increased emphasis on exploring, analyzing the rules, discussing, developing, and presenting literature and poetry in sign language. Prerequisite: Pass ASL-202 or instructor consent.

ASL-211 Conversational American Sign Language
3 credits, not offered every year
An immersion course in the concepts of ASL. Emphasizes the development of receptive signing skills and expands communicative abilities. To apply to a university interpreter program, further studies are needed. Prerequisite: Current enrollment in or successful completion of ASL-103 or instructor consent.

BA

Business Administration

BA-101 Introduction to Business
4 credits, Fall/Winter/Spring
Introduces the American business system in a changing global environment. Disciplines covered include economics, entrepreneurship, formation, accounting, finance, marketing, and management. Recommended: Pass RD-090 or placement in RD-115.

BA-103 Business Strategies for Computer Consultants
3 credits, not offered every term
Introduces the procedures for establishing and developing a successful consulting business in computer-related services including web development, network support, and computer support.

BA-104 Business Math
3 credits, Fall/Winter
Business applications including mark-ups and mark-downs; simple interest; present value and future value of single sums and annuities; gains, losses and valuations of stocks, bonds, mutuals, and other investments. Also included are accounting math applications of depreciation, inventory valuation, financial ratios and analysis. Prerequisite: Pass MTH-050 or place into higher level math class.

BA-109 IFRS Accounting Standards
1 credit, not offered every term
Explains the what, how, when, and why of the IFRS (International Financial Reporting Standards) which are scheduled to be fully implemented in the U.S. by 2014. While the requirements are not locked in at this point (and are still evolving) students graduating or transferring in accounting majors must be aware of, understand, and be able to discuss the IFRS standards and how they will affect small, medium, and large business financial accounting reports. This is a temporary course, when IFRS is implemented in 2014, the concepts will be integrated into the transfer accounting courses, BA-211, 212, and 213. Prerequisites: BA-111 or BA-211.

BA-111 General Accounting I
4 credits, Fall/Winter/Spring
Full-cycle recordkeeping and payroll for service and merchandising businesses; topics include subsidiary ledgers, journalizing, preparing financial statements, and end-of-period adjustments for small businesses. Recommended: Pass RD-090 or placement in RD-115.

BA-112 General Accounting II
4 credits, not offered every year
Financial recordkeeping topics include reporting standards; cash collections and controls; receivables and payables; inventory adjustments; and valuing property, plant and equipment, accounting for proprietorships. Also introduced are partnerships and corporate form of ownership. Prerequisite: Pass BA-111.
BA-120 Project Management Fundamentals
3 credits, Fall
A foundational course in project management. Students gain a thorough grounding in project management principles and techniques, including project life cycle, chartering stakeholder management, work/task breakdown, network diagram and critical path, contingency planning, resource allocation, and project monitoring, and reporting.

BA-122 Teamwork
3 credits, Fall
Focuses on team dynamics and skills for achieving goals while working in a diverse group. Students complete a team project and in the process, practice successful communication strategies, goal definition, schedule coordination, peer feedback, and conflict management. Additional course topics include learning styles, diversity, appreciating differences, and ethical behavior in teams.

BA-123 Leadership and Motivation
3 credits, Fall
Focuses on leadership—achieving organizational goals by employing human, financial, and organizational resources—and provides both a theoretical and a practical perspective on leadership and motivation skills. By engaging in both introspective and interactive exercises, students build the expertise necessary to lead both projects and organizations.

BA-124 Negotiation
3 credits, Spring
Approaches negotiation from both theoretical and practical perspectives, with an emphasis on successful—and ethical—negotiation techniques. Students engage in one-on-one and team negotiation role plays and complete both pre- and post-negotiation analyses. Students also predict and then evaluate effective negotiations from the perspective of themselves and their peers.

BA-125 Advanced Project Management Tools
5 credits, Winter
Tools and processes employed in project communication, risk, procurement, and quality. Major topics include project communication planning and communication channels and approaches; risk assessment and risk management in a project environment; project procurement planning and management with an emphasis on contract types and contract awards; and approaches to project quality planning, quality assurance, control and improvement. Required: Current enrollment in or successful completion of BA-120.

BA-126 Project Management: Workshop
3 credits, Spring
In small teams, students manage a simulated project, managing schedule, resources, and reporting project status. As a final outcome, student teams submit a report and presentation that summarizes the project experience and lessons learned. Course tools include Microsoft Project 2010, in which the student is expected to have prior training. Prerequisites: Pass BA-120, BA-125 & BT-177 or instructor consent.

BA-130 Leadership in Literature
4 credits, not offered every year
Examines the nature of leadership by analyzing characters who are leaders in major literary works. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

BA-131 Introduction to Business Computing
4 credits, Fall/Winter/Spring
Introductory course using Microsoft Word, Excel, Access, and PowerPoint applications to create business documents, utilize the Internet, and file management. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass BT-120 or instructor consent.

BA-133 Business Forecasting
3 credits, not offered every year
Covers fundamentals of purchasing, including the role of the purchasing function, purchasing objectives and policies, operating procedures, purchase descriptions and specifications, sources of supply, types of contracts and ordering agreements, legal considerations, and ethical and professional standards.

BA-136 Project Management: Management Tools
3 credits, Spring
Covers the basic elements of copyright law and licensing as it applies to artists, songwriters, composers, filmmakers, and New Media Artists. Also covers how to protect your intellectual property and benefit from your rights as a copyright owner.

BA-156 Business Forecasting
3 credits, Winter
Basic economic principles applied to business decision-making, forecasting, and critical thinking skills related to budgeting, planning, financial analysis, and application of business policy and practice. Designed for business majors. Recommended: Pass RD-090 or placement in RD-115.

BA-160 Purchasing I
3 credits, not offered every year
Covers fundamentals of purchasing, including the role of the purchasing function, purchasing objectives and policies, operating procedures, purchase descriptions and specifications, sources of supply, types of contracts and ordering agreements, legal considerations, and ethical and professional standards.

BA-161 Purchasing II
3 credits, not offered every year
Covers more advanced purchasing concepts and techniques, such as win-win negotiations, total cost management, supplier management, continuous quality improvement, value analysis and value engineering, and inventory management. Prerequisite: Pass BA-160 or instructor consent.

BA-177 Payroll Accounting
3 credits, Winter
Basic personnel payroll records necessary in business firms, laws affecting payroll systems, procedures used in computing wages, salaries and deductions, and manual preparation of payroll records and reports. Prerequisite: Pass BA-111 or BA-211.
BA-205 Solving Communication Problems with Technology
4 credits, Fall/Winter/Spring
Students practice critical skills for successful communication in a business environment by employing a structured writing process, analyzing audience needs, and identifying and using appropriate communication channels and modalities. Students also work individually to produce a PowerPoint presentation with embedded narrative and as team members to manage a comprehensive project and complete a business research paper. Recommended: Pass RD-090 or placement in RD-115. Prerequisites: Pass BA-131 and WR-121.

BA-206 Management Fundamentals
4 credits, Fall/Winter/Spring
Concepts and theories of management with focus on planning, organizing, leading, and controlling. Organizational structures, planning principles, global management, managing change and culture, effective communication, and motivation. Recommended: Pass RD-090 or placement in RD-115.

BA-208 Employee Labor Relations
4 credits, Winter
Provides a legal and historical overview of employee and labor relations in union and non-union environments. Presents a realistic picture of collective bargaining and labor relations situations and highlights contemporary issues in employee relations, unions, bargaining units, and employee group representation.

BA-211 Financial Accounting I
4 credits, Fall/Winter/Spring
Basic principles of accounting cycle for service and merchandising companies, journals, ledgers, accounting for cash, end-of-period operations, worksheets, entries, and financial statements. Emphasis on procedure and theory. Recommended: Pass RD-090 or placement in RD-115.

BA-212 Financial Accounting II
4 credits, Fall/Winter/Spring
Principles and practices in service and merchandising corporations, cash controls, receivables, assets, long-term and long-term liabilities, debt, and financial statements. Corporate analysis of financial position including the cash flow statement. Prerequisite: Pass BA-211.

BA-213 Decision Making with Accounting Information
4 credits, Fall/Winter/Spring
Accounting for manufacturing operations, cost systems, capital budgeting, variances and budget performance reports, job order, process, flow, and cost/volume profit analysis and standard costs. Presentation and interpretation of accounting data to aid decisions. Prerequisite: Pass BA-212.

BA-214 Business Communication
3 credits, not offered every year
Focuses on the development of written communication skills in a business organization. Within communications, the interpersonal skills, in the form of both written and oral expression, are integrated to achieve individual and organizational objectives. Both informal and formal techniques are applied to a variety of business communication scenarios.

BA-216 Cost Accounting
3 credits, Winter
Job order and process costing to a higher level, including variances and cost estimations; standard and variable costing in a manufacturing environment; inventory and capacity analysis; customer-profitability analysis; spoilage, rework and scrap; and performance measurement. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass BA-213.

BA-217 Budgeting for Managers
3 credits, Spring
Focuses on developing and managing departmental and project budgets and on understanding how they fit into the overall organizational framework. Addresses fixed, flexible, and rolling budgets, break-even and contribution margin analysis, profit planning, manufacturing costs and sales forecasts, and cost behavior and variance analysis. Recommended: Pass BA-111 or BA-211 or have experience in accounting or work-related budgeting. Pass RD-090 or placement in RD-115.

BA-218 Personal Finance
3 credits, Fall/Winter/Spring
Analysis and personal application of basic principles in budgeting, financial decision-making, use of credit, savings and investing, home ownership, risk management, estate planning, and other major personal finance topics. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass MTH-020 or higher, or pass BA-104.

BA-222 Financial Management
3 credits, Winter
Study of sources and uses of funds, financial, and cash flows; includes valuation of financial assets; long-term cash flows and budgeting; cost of capital; capital structure and dividend policy; working-capital management, ethics, and international business finance. Prerequisite: Pass BA-212.

BA-223 Principles of Marketing
4 credits, Fall/Winter
Offers a comprehensive investigation of strategic marketing in a global environment. Topics covered will include research, ethics, consumer behavior, product strategy, distribution strategy, promotional strategy and pricing strategy. Recommended: Pass RD-090 or placement in RD-115.

BA-224 Human Resource Management
4 credits, Fall/Spring

BA-225 Business Report Writing
3 credits, not offered every year
Focuses on the skills and techniques required to write and produce professional business reports, including research, writing, formatting, and presentation. Prerequisites: Pass WR-121 & pass BA-205 or instructor consent.
BA-226 Business Law I
4 credits, Fall/Winter/Spring
Concepts, principles, and rules of law applicable to business and personal transactions, with emphasis on sources of law, the U.S. Constitution, personal and business torts and crimes, case-based applications, ethics, and consumer contract law. Recommended: Pass RD-090 or placement in RD-115.

BA-227 Business Law II
4 credits, Winter
Emphasis on real and personal property, negotiable instruments, insurance, documents of title, secured transaction, bailments, commercial paper, agency, bankruptcy, suretyship, bulk sales, and estate planning. Prerequisite: Pass BA-226.

BA-228 Computerized Accounting
3 credits, Spring
Provides the student with an introductory hands-on experience to learn how computers are used for accounting applications using a Windows operating system environment. Prerequisite: Pass BA-111 or BA-211.

BA-229 Employment Law
4 credits, Spring

BA-238 Sales
4 credits, Spring
Professional consultative selling techniques and how professional selling fits into a comprehensive marketing program as well as daily life. Interactive exercises will be used throughout the course that emphasize face-to-face communication skills and relationship building. Recommended: Pass RD-090 or placement in RD-115.

BA-239 Advertising
4 credits, Fall
Emphasizes a strategic and integrated approach to promotion where traditional and non-traditional techniques of promotion are explored. The relationship and role of advertising to marketing will be stressed throughout the course. Recommended: Pass RD-090 or placement in RD-115, BA-101.

BA-249 Retailing
3 credits, not offered every term
Provides an understanding of the types of businesses, strategies, operations, formats and environments through which retailing is carried out. Takes a multi-disciplinary approach to consider the process and structure of retailing. Recommended: Pass RD-090 or placement in RD-115.

BA-250 Small Business Management
3 credits, Winter
Managing a small business, identifying a market opportunity, developing a business plan, and meeting the competition. Also financial accounting and cash-flow projections. Recommended: Pass RD-090 or placement in RD-115.

BA-251 Supervisory Management
3 credits, Fall/Winter
Role and responsibilities of the first-line supervisor or manager. Analyzing business, dealing with change, staffing and scheduling, leadership, decision-making, motivational skills, legal considerations, and managing teams. Recommended: Pass RD-090 or placement in RD-115.

BA-254 Basic Compensation and Benefits
4 credits, Spring
Covers wages, salary benefits, and plans with a primary focus on designing an effective and strategic compensation and benefit program within an organization. Covers general compensation topics, terminology, and practical applications to the workplace.

BA-255 Advanced Topics in Accounting & Auditing
4 credits, Spring
Capstone class for students working towards the Accounting AAS degree. The course will build upon knowledge obtained from the Principles of Accounting courses and introduce, from a user perspective, more advanced topics such as Fund and Governmental Accounting, Auditing, Fraud Examination, and current issues in Taxation. Prerequisite: BA-213 or instructor consent.

BA-256 Income Tax Accounting
3 credits, Fall
Detailed review of the federal tax structure as it relates to the preparation of individual tax returns. Also provides a brief overview of partnership and corporate tax returns. Recommended: Pass RD-090 or placement in RD-115.

BA-261 Consumer Behavior
4 credits, Spring
Seeks to understand how and why people make consumption decisions then apply this understanding to marketing strategies. Concepts of the consumer decision-making process, personal and interpersonal factors and their impact on consumer decisions are major components. Prerequisite: Pass BA-101.

BA-268 Applied Project Demonstration
3 credits, Fall/Winter/Spring
Students demonstrate the ability to manage a real-world project from initiation through closing. Course deliverables include project scope statement, communication management plan, risk management plan, status report with Gantt chart, and “Lessons Learned” report and presentation. The project—along with a comprehensive exam—demonstrates knowledge acquired in prerequisite classes in the Project Management degree program.

BA-280 Business/CWE
3-6 credits, Fall/Winter/Spring
Cooperative work experience. On-the-job experience in a business related to the student’s major course of study. Under supervision of instructor and employer. Required: Instructor consent & a CWE seminar.

BA-281 Business/CWE
3-6 credits, Fall/Winter/Spring
Cooperative work experience. On-the-job experience in a business related to the student’s major course of study. Under supervision of instructor and employer. Required: Instructor consent & a CWE seminar.
BA-285 Human Relations in Business
4 credits, Fall/Winter/Spring
Discusses psychological principles that help build relationships among employees and employers, including goal setting, motivation, communication, leadership, evaluation, conflict management, individual and group behavior. Recommended: Pass RD-090 or placement in RD-115.

BI

BI-101 General Biology; Cellular Biology
4 credits, Fall/Winter/Spring/Summer
An inquiry-based laboratory course focusing on cellular biology, genetics, epigenetics, biotechnology and natural selection. Class uses student centered activities in a collaborative learning environment to enhance appreciation of the biological world. Recommended: Pass MTH-060 or placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

BI-102 General Biology; Animal Systems
4 credits, Fall/Winter/Spring/Summer
An inquiry-based laboratory course focusing on human and animal body systems; including teratogens, Hox genes and hormone mimics in embryonic development. Activities emphasize comparisons across animal phyla to better understand the diversity of life. The class uses student centered activities in a collaborative learning environment to enhance appreciation of the animal kingdom. Recommended: Pass MTH-060 or placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

BI-103 General Biology; Plants and the Ecosystem
4 credits, Fall/Spring/Summer
An inquiry-based laboratory course focusing on plants and the ecosystem; including plant identification, population dynamics, productivity and energy flow. Activities include an integrated approach to understanding environmental issues and the impact of humans on the biosphere. The class uses student centered activities in a collaborative learning environment to enhance appreciation of the biological world. Recommended: Pass MTH-060 or placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

BI-112 General Biology for Health Sciences
4 credits, Fall/Winter/Spring/Summer
One-term preparatory biology course that introduces the Health Occupations student to the scientific method, cellular chemistry, cell structure and function, processes that affect the cell and its components, principles of inheritance, natural selection, tissues and organ systems. Topics and skills covered prepare student to enter BI-231, Anatomy & Physiology; and BI-234, Introductory Microbiology. Recommended: Pass MTH-060 or placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Corequisite: CH-112 strongly recommended.

BI-120 Introduction to Human Anatomy & Physiology
4 credits, Fall
Laboratory course designed to serve the students in the Career Technical programs: Medical Assistant and Clinical Assistant Laboratory students as part of their core curriculum. Material covered includes the structure and function of the human body. Basic chemistry and cell structures are covered, as well as the organization of tissues, organs, and organ systems. Correlations can then be made between this material and disease states commonly encountered in the practice of these fields.

BI-160 Bird ID & Taxonomy
3 credits, not offered every year
Lecture course introducing bird anatomy, identification, classification, and behavior. Identification techniques applied to birds through lectures, slides and field trips to various locations in Eastern Oregon, the Willamette Valley and the Oregon Coast. Corequisite: BI-160L.

BI-160L Bird ID & Taxonomy Lab
1 credit, not offered every year
Lab course consisting of weekend field trips and online labs. This lab accompanies the BI-160, Bird ID and Taxonomy lecture. Focuses on field identification of common Oregon birds by sight, sound, and habitat. Field trips required. Corequisite: BI-160.

BI-165C Natural History of the Oregon Coast
3 credits, not offered every year
Explores the natural processes that form our Northwest coastal environment: geologic development, shoreline processes, oceanography, and environmental hazards. Topics include the ecology of marine mammals, birds, estuaries, tidepools, sand dunes, and coastal forests.

BI-165CL Natural History/Oregon Coast Lab
1 credit, not offered every year
A lab to accompany the BI-165C, Natural History of the Oregon Coast, lecture. Field trips and exercises focus on the plants, animals, geology, and environmental issues of the Oregon coast. Corequisite: BI-165C.

BI-165D Natural History of SW Deserts
4 credits, Spring
A lab course studying plants, animals, geology, and environmental issues of the Great Basin Region and Death Valley National Park. On-site study. A nine-day trip through Southwestern United States desert regions. Required: Instructor consent.
BI-16ST Natural History of Tropical Ecosystems  
4 credits, Spring  
A field-based lab course studying plants, animals, ecology, geology, and environmental issues of tropical ecosystems. On-site study with varied locations. Required: Instructor consent.

BI-204 Elementary Microbiology  
4 credits, Winter  
A lab course with environmental focus. Explores microscopic life, its importance in the environment, industry and water-borne pathogens. Labs provide practice with aseptic technique and introduces tools and methods used in the study of microorganisms.

BI-211 Biology for Science Majors; Cellular Biology  
5 credits, Fall  
The first quarter of a three-quarter sequence of a laboratory course for science majors and pre-professional students. It emphasizes an evolutionary approach to cell biology. It emphasizes cell biology; including the process of science, cell structure, organization and function, cellular communication, biochemical processes, DNA, cell cycle, protein synthesis, biotechnology, genetics, epigenetics, evolution, and an introduction to tissues, organs and organ systems. Recommended: Pass MTH-105 or pass MTH-111 with a C or better or placement in MTH-112; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Corequisite: CH-104 or CH-221.

BI-212 Biology for Science Majors; Animal Biology  
5 credits, Winter  
The second quarter of a three-quarter sequence of a laboratory course for science majors and pre-professional students. It emphasizes an evolutionary approach to animal biology; including animal diversity, development and the effects of Hox genes and hormones, comparisons of animal body systems including human, homeostasis and behavior. Prerequisite: Pass BI-211. Corequisite: CH-105 or CH-222.

BI-213 Biology for Science Majors; Plant Biology & Ecology  
5 credits, Spring  
The third quarter of a three-quarter sequence of a laboratory course for science majors and pre-professional students. It emphasizes an evolutionary approach to plant biology and ecology; including plant diversity, plant organ systems and their functions, photosynthesis and transpiration, productivity and energy transfer, nutrient cycles, population dynamics, ecosystems and environmental issues. Prerequisite: Pass BI-212. Corequisite: CH-105 or CH-222.

BI-231 Human Anatomy and Physiology I  
4 credits, Fall/Winter/Summer  
A lab course designed for students entering physical education or medically-related fields. Includes body organization, terminology, tissues, and a study of the integumentary, skeletal, and nervous systems. Animal organ dissection required. Recommended: Pass MTH-095 with a C or better or placement in MTH-105 or MTH-111; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass BI-112 (preferred), or pass BI-211 or both BI-101 and BI-102. Pass CH-112 (preferred), or pass CH-104 and CH-105, or pass CH-221 and CH-222.

BI-232 Human Anatomy and Physiology II  
4 credits, Fall/Winter/Summer  
A lab course covering structure and function of the muscular, cardiovascular, lymphatic, and respiratory systems. Animal organ dissection required. Prerequisite: Pass BI-231 with a C or better.

BI-233 Human Anatomy and Physiology III  
4 credits, Fall/Winter/Summer  
A lab course covering neuroendocrine control, digestive, excretory, and reproductive systems. Study of fluid, electrolyte, and acid base balance. Animal organ dissection required. Prerequisite: Pass BI-232 with a C or better.

BI-234 Introductory Microbiology  
4 credits, Fall/Winter/Spring  
An introductory microbiology lab course for health science and science majors. Includes characteristics, physiology and growth requirements of microorganisms, interactions between humans and microorganisms, immunology, infection, and principles of microbial control. This course emphasizes critical thinking and analytical skills in a collaborative laboratory environment. Prerequisites: Pass BI-101, BI-112 or BI-211 and pass CH-104, CH-112 or CH-221.

BI-280 Biology/CWE  
2-6 credits  
Fall/Winter/Summer  
Cooperative work experience. Provides students with on-the-job work experience in the field of biology. Required: Instructor consent & a CWE seminar.

BRI  
Courses with this prefix will not transfer to a four-year institution.

Bridges  
BRI-090 Bridges  
3 credits, not offered every term  
Designed to assist young adults (17-23) in successfully transitioning to higher education by providing awareness of educational options and resources; overcoming barriers; exploring attitudes, abilities and interests; goal setting; and presenting opportunities to aid students in college success; therefore enabling them to take full advantage of options that will positively shape their future. Prerequisites: GED or High School Diploma, and/or instructor consent.

BRI-095 Bridges to Work  
3 credits, not offered every term  
Designed to assist young adults (17-23) in successfully transitioning to higher education through providing awareness of educational options and resources; overcoming barriers; exploring attitudes, abilities and interests; goal setting; and presenting opportunities to aid students in college success, therefore enabling them to take full advantage of options that will positively shape their future. Prerequisites: GED or High School Diploma, and/or instructor consent.
Business Technology

**BT-101 Introduction to e-Learning**  
1 credit, not offered every term  
Introductory course for students who are new to web-based, e-learning courses including courses which are web-assisted, hybrid, or full-online. The course will include e-learning fundamentals including the use of e-learning course management software, e-learning readiness and student success tips, support resources, technical requirements, and online research basics.

**BT-110 Income Tax Preparation**  
8 credits, Fall  
An introduction to individual income tax law and tax return preparation. Approved by the Oregon State Board of Tax Practitioners to prepare students to take the Oregon Licensed Tax Preparer’s Exam. Recommended: Pass RD-090 or placement in RD-115.

**BT-120 Personal Keyboarding**  
2 credits, Fall/Winter/Spring  
Basic instruction on electronic alphanumeric keyboard. Provides practice for speed and accuracy with individual program. Students will develop the necessary skills to effectively use the Internet, use e-mail, and create simple documents.

**BT-122 Keyboarding Skillbuilding**  
2 credits, Fall/Winter  
Designed to improve typing proficiency using microcomputers. Students will refine and further develop speed and accuracy skills learned in BT-120 Personal Keyboarding. Recommended: Pass BT-120 or instructor consent.

**BT-124 Business Editing I**  
3 credits, Fall  
Course builds communication skills through the study of correct usage of grammar, spelling, vocabulary usage, effective writing, and editing principles. Recommended: Pass RD-090 or placement in RD-115.

**BT-125 Business Editing II**  
3 credits, Winter  
Course follows BT-124 and will continue to build communication and writing skills by studying correct grammar, spelling, punctuation, vocabulary usage, and writing principles. Prerequisite: Pass BT-124 with a C or better.

**BT-160 Word I**  
3 credits, Winter  
Introductory-level course where students learn basic concepts of the Word software program. This course is designed for students who have no or little knowledge of Word. Prerequisite: Pass BT-120 or instructor consent. Recommended: 35 words per minute typing skill.

**BT-161 Word II**  
3 credits, Spring  
Intermediate level course where students learn more advanced features of the Microsoft Word software program. This course is designed for students who have completed BT-160 Word I. Prerequisite: Pass BT-160. Recommended: Pass BT-124 and 40 words per minute typing skill.

**BT-172 Introduction to Microsoft Outlook**  
2 credits, Spring  
Introductory course using Microsoft’s Outlook application as a tool to send and receive email, organize schedules and events, and maintain contact lists, to-do lists, and tasks. The material covered in this course teaches the necessary skills required in those business environments that use Outlook.

**BT-173 Introduction to Microsoft PowerPoint**  
2 credits, not offered every year  
Fundamentals in learning the basics of presentation concepts including how to plan, develop, and give a presentation to present data and information using Microsoft’s presentation graphics program. Prerequisite: BT-120 or instructor consent.

**BT-177 Microsoft Project**  
3 credits, Winter  
Covers the basics of using Microsoft Project to plan, schedule, and track a project. Also addresses communicating project information, assigning and tracking resources and costs, tracing progress, and closing a project. Concludes with students using Microsoft Project to produce management and other reports and to share project information with other audiences and applications.

**BT-216 Office Procedures**  
4 credits, Fall  
Introduction to Acrobat forms and documents. Google Applications such as Word, Excel, and PowerPoint. Recommended: 45 words per minute typing skill. Prerequisite: Pass BT-161 with a C or better.

**BT-262 Integrated Projects**  
4 credits, Fall  
Advanced Microsoft Word skills in creating letters, reports, and forms; in creating Excel worksheet reports and budgets; in creating Access databases to generate reports and forms; in creating PowerPoint presentations, and in linking documents and saving as Web pages. Introduction to Acrobat forms and documents. Google Applications such as Word, Excel, and PowerPoint, and Gmail. Recommended: 45 words per minute typing skill. Prerequisite: Pass BT-161 with a C or better.
BT-271 Advanced Business Projects
4 credits, Spring
Participate in dynamic business simulations that provide experience in working as team members in a professional environment. Practice using oral and written communications, analyzing information, problem solving, decision making, prioritizing, applying time management skills, and using industry standard technology tools. Prerequisite: BA-205, BA-228, BT-125, BT-216, BT-262, & CS-1355.

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

Computer-Aided Drafting
For additional information contact the Manufacturing Department at 503-594-3318.

CAD-160 Revit Architecture
3 credits, not offered every term
Introduction to the basic principles in Revit Architecture. From design to construction documents, students will create floor plans using walls, doors, windows, and add furniture fixtures, curtain walls, floors, ceiling grids, and generate elevations, sections, details and schedules directly from the model.

CDT-102 Sketching and Problem Solving
1-3 credits, Fall
Freehand sketching encountered in drafting engineering projects. Selecting views and implementing drafting standards. Dimensioning, lettering, sections and auxiliary views are covered. Problem solving in individual and group settings.

CDT-103 Computer-Aided Drafting I
1-4 credits, Winter
Introduction to drafting applications using AutoCAD. Instruction includes problem solving, drawing layout, orthographic multi-view projection, line types, geometric construction, and current drafting techniques. Use industry standards for CAD drawing, editing, file management, dimensions and notes. Recommended: Completion of CDT-102.

CDT-108A Introduction to SolidWorks
1-3 credits, Fall/Spring
An introduction to the SolidWorks parametric mechanical design software. Students will design 3D solid parts and assemblies, and develop 2D documentation from them.

CDT-223 Inventor Fundamentals
1-3 credits, Winter
Introduces parametric and adaptive modeling techniques using Autodesk Inventor. This course will guide students through design environment setup, creation of simple and complex part geometry, assembly building, animation, and detailed 2D drawing output. Recommended: Basic working knowledge of Windows operating system and Microsoft Excel.

CDT-224 Professional Web Design
1-3 credits, Spring
Introduction to the design, creation and management of professional web pages. Basic and intermediate HTML document creation, introduction of JAVASCRIPT, use and manipulation of graphic image files, animating web page graphics, HTML forms.

CDT-225 Advanced SolidWorks
1-3 credits, Winter
Advanced features of SolidWorks will be discussed and problems will be worked that exemplify them. Subjects include equations, configurations, design tables and dynamics. Prerequisites: CDT-108A or instructor consent.

CH

Chemistry

CH-104 Introductory Chemistry
5 credits, Fall/Winter/Spring/Summer
A lab transfer course for students in nursing, allied health fields, and liberal arts. Observation, measurement, composition, stoichiometry, atomic structure, periodic table, bonding, and nomenclature. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-095, pass RD-090 or placement in RD-115.

CH-105 Introductory Chemistry
5 credits, Winter/Spring/Summer
A laboratory course discussing heat; molecular and ionic interactions in solids, liquids, gases, and solutions; chemical reactions including acid-base, electron transfer, and equilibrium. Prerequisite: Pass CH-104 (CH-112 not accepted).

CH-106 Introductory Chemistry
5 credits, Spring/Summer
A lab course discussing organic and biochemistry. Prerequisite: Pass CH-105.

CH-112 Chemistry for Health Sciences
4 credits, Fall/Winter/Spring/Summer
One-term preparatory biology course for students who want to take BI-231, Anatomy & Physiology; and/or BI-234, Introductory Microbiology. Includes measurement; atomic structure; periodic table; bonding; nomenclature; heat; molecular and ionic interactions in solids, liquids, and solutions; chemical reactions including acid-base; organic chemistry; and biochemistry. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-095. Pass RD-090 or placement in RD-115. Corequisite: BI-112 strongly recommended.

CH-150 Preparation for Chemistry
4 credits, Fall
One term preparatory course for students who must take the general chemistry sequence (CH-221/222/223) but have no chemistry background. Prerequisite: Pass MTH-095 with a C or better or placement in MTH-111.

CH-221 General Chemistry
5 credits, Fall/Winter
Transfer lab course for science, engineering, and professional majors. The nature of chemistry, atomic theory, electron configuration, structure, bonding, properties, composition and nomenclature of covalent and ionic substances. Introduces organic chemistry and biochemistry topics. Prerequisites: A year of high school chemistry or pass CH-150 or CH-104 and CH-105; pass MTH-095 with a C or better or placement in MTH-105 or MTH-111.
CH-222 General Chemistry
5 credits, Winter/Spring
A lab course discussing reactions, stoichiometry, thermodynamics, organic compounds and polymers, kinetics, and equilibrium. Topics involving organic chemistry and biochemistry are introduced. Prerequisite: Pass CH-221.

CH-223 General Chemistry
5 credits, Spring/Summer
A lab course discussing states of matter, solutions, acids and bases, electrochemistry, nuclear chemistry, and spectroscopy. Topics involving organic chemistry and biochemistry are introduced. Prerequisite: Pass CH-222.

CH-241 Organic Chemistry I
5 credits, not offered every year
First term of a transfer sequence lab course meeting the organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering, and biology majors. Prerequisite: Pass CH-223.

CH-242 Organic Chemistry II
5 credits, not offered every year
Second term of a transfer sequence lab course meeting organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering, and biology majors. Prerequisite: Pass CH-241.

CH-243 Organic Chemistry III
5 credits, not offered every year
Third term of a transfer sequence lab course meeting organic chemistry requirement for premedical, dental, veterinary, pharmacy, chiropractic medicine, chemical engineering, and biology majors. Prerequisite: Pass CH-224.

CH-280 Chemistry/CWE
1-6 credits, not offered every term
Provides students with on-the-job experience in the field of chemistry. A weekly seminar is required and covers on-the-job issues and procedures. Supervision and evaluation of the student's job performance provided by qualified college staff and a supervisor of the employment site. Can be repeated for up to 12 credits. Prerequisite: Students must have previously completed 9 credits at CCC, declared a major and secured a job related to that major. Required: Instructor consent and a CWE seminar.

CIV
Courses with this prefix will not transfer to a four-year institution. Courses are intended for ESL students.

CIV-007 Citizenship Preparation
0 credit, not offered every term
Prepares students to pass the oral exam for U.S. citizenship. Students study U.S. history, government, citizens’ rights and responsibilities, and U.S. symbols independently through a self-paced, online distance learning course, and periodic meetings with the Volunteer Tutor Coordinator, taking quizzes after completing separate modules. Required: Instructor consent.

CJA
Criminal Justice
CJA-101 Criminology
3 credits, Spring
Examines the social problem of crime, including the process of making and breaking laws as well as society's reaction to the phenomenon. Provides a multidisciplinary study of the causes of crime, including its distribution across social strata and demographics. Focuses on theories of criminal behavior and specific types of crime.

CJA-110 Introduction to Law Enforcement
4 credits, Fall
Examines theories, philosophies, and concepts of American law enforcement. This course also examines the history of law enforcement, specific components of the system, public safety responses, and the professionals charged with peace keeping.

CJA-112 Patrol Procedures
3 credits, Not offered every term
Describes the nature and purpose of patrol activities for the law enforcement officer. Includes routine emergency procedures and types of patrols. Examines crime prevention theory and community policing.

CJA-120 Judicial Process
3 credits, Winter
Studies the judicial and social processes from arrest through appeal, including search and seizure; interrogation; roles of defense attorneys, prosecutors, juries, grand juries, and judges; plea bargaining and guilty pleas; rights of criminal defendants at trial, appeals and habeas corpus.

CJA-122 Criminal Law
4 credits, Fall
Examines the elements, purpose and functions of criminal, traffic, juvenile and liquor laws. Studies historical development, philosophy of law, and constitutional provisions. Examines definition and classification of crime, application of administration of justice, legal research, study of case law, methodology and concepts of law as a social force. Prerequisite: Pass CJA-120.

CJA-130 Introduction to Corrections
3 credits, Spring
Examines the history, organization, and development of corrections in the United States, including sentencing, incarceration, community corrections and the juvenile justice system. Reviews the use of the death penalty. Identifies trends in corrections.

CJA-134 Correctional Institutions
3 credits, Fall
Analyzes prisons, jails and other correctional institutions. Discusses punishment history and rationale. Identifies functions of custodial staff and describes institutional procedures: reception, classification, program assignment, and release. Studies prison management systems and examines juvenile facilities.
CJA-170 Introduction to Field Work in Criminal Justice
3 credits, Fall
Provides required preparation for participation in Criminal Justice/Corrections Cooperative Work Experience. Discusses the process of pursuing a career in the criminal justice system, including law enforcement, the practice of law, courts, corrections, and private security. Includes topics related to Cooperative Work Experience such as finding a field placement, interviewing, and creating learning objectives. Addresses hiring, promotions, and workplace ethics. Students must successfully complete this course before participating in Criminal Justice/CWE. Prerequisites: Pass CJA-110 with a C or better, or instructor consent.

CJA-200 Community Policing in a Culturally Diverse Society
4 credits, Fall
Examines interrelationships and role expectations of agencies and public policy. Provides information on how law enforcement professionals work effectively with diverse cultural groups. Explores racial and community tension, minority group crime, racial profiling, hate crimes, community policing, police misconduct and alternative lifestyles encountered in law enforcement.

CJA-201 Juvenile Delinquency
4 credits, Winter
Surveys the nature and extent of delinquent behavior. Studies the historical and contemporary perspectives on juvenile offenders. Describes laws, enforcement, court, and correctional procedures within the juvenile system, and explores the differences between adult and juvenile practices. Prerequisite: Pass CJA-101.

CJA-203 Crisis Intervention
3 credits, Spring
Examines crisis intervention as it applies to emergency service workers. Includes psychodynamics of family crisis; alcohol/drug related problems; suicide; sexual assault victims; domestic violence; mentally disturbed individuals; neglected, battered, abused children.

CJA-210 Criminal Investigation I
3 credits, Fall
Introduces the history, theory, and principles of criminal investigation in the justice system. Describes crime scene investigation and courtroom aspects of crime scenes including interviews, evidence, surveillance, follow-up, case preparation, and techniques for specific crimes.

CJA-211 Criminal Investigation II
3 credits, Winter
Continues the study and application of investigative techniques for specific offenses, including: death investigations, domestic violence, elder abuse and sexual offenses. Identifies similarities, differences, and elements of proof needed under state statutes and documentation of investigations through comprehensive reports. Prerequisite: CJA-210.

CJA-212 Criminal Investigation III
3 credits, Spring
Continues the study and application of investigative techniques acquired in CJA-210 Criminal Investigation I and CJA-211 Criminal Investigation II. Includes "hands-on" application of investigative processes from a practical aspect, including: search warrant writing, fingerprinting, evidence collection, and crime scene photography, diagramming and reconstruction. Prerequisite: CJA-211.

CJA-213 Interview & Interrogation
3 credits, not offered every term
Examines the dynamics of interviews and interrogations including common processes, approaches and techniques. Ethical, legal and psychological issues are also considered. Includes methods of how to analyze statements and behavior for deception and truthfulness.

CJA-220 Criminal Justice Ethics
3 credits, Winter
Surveys common ethical frameworks and then examines ethical issues, questions, challenges and consequences facing criminal justice professionals, including law enforcement, corrections, the courts and others.

CJA-232 Corrections Casework
3 credits, Spring
Introduces interviewing and counseling techniques used by corrections officers and workers in one-on-one and group contacts with clients. Discusses how to supervise the alcoholic, drug addicted, sex offender, mentally ill, juvenile, elderly, and emotionally immature client. Explores a variety of case management materials, with an emphasis placed on objective case planning and monitoring.

CJA-243 Drugs, Crime and the Law
3 credits, Winter
Examines the most common types of drugs consumed in society, effects of psychoactive substances, treatment and prevention models, laws and regulations, societal effects of drug policies, business of the illegal drug market, potential crimes associated with drugs, and law enforcement strategies used to address drug manufacturing, distribution and use.

CJA-250 Reporting, Recording and Testifying
4 credits, Spring
Surveys documentation skills in criminal justice professions. Verbal, nonverbal and written forms of criminal justice related workplace communication are studied and practiced, including communicating with the public, basic interviewing, documentation, courtroom testimony, and report writing. Prerequisites: Pass WR-121 with a grade of C or better.

CJA-252 Introduction to Restorative Justice
3 credits, Fall
Provides a critical introduction to the history, values, principles, and practices of restorative justice. Covers fundamental values and principles of restorative justice, and the experience and interests of key stakeholders (victims, offenders, communities, and systems).
CJA-280 Criminal Justice/Corrections/ CWE
2-6 credits, Fall/Winter/Spring

CJA-281 Criminal Justice/Corrections/ CWE
2-6 credits, Fall/Winter/Spring

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

Clinical Laboratory Assistant

CLA-100 Introduction to Healthcare
2 credits, Fall
Introduction to healthcare systems and trends, ethical and legal responsibilities, personal and workplace safety, infection control, professionalism, life-long learning, and communication.

CLA-101 Clinical Laboratory Assistant Skills I
4 credits, Fall
Presents the student with a general overview of a clinical laboratory, including state and federal regulations, quality assurance practices, laboratory terminology, staffing, and a basic understanding of quality laboratory testing. The majority of the competencies required in the Core Module of NAACLS’s Clinical Laboratory Assistant program will be covered. Required: Students must be admitted into the current CLA cohort, or instructor consent.

CLA-102 Clinical Laboratory Assistant Skills II
4 credits, Winter
Addresses hematology and urinalysis theory with assistant level scope of practice. Correct specimen collection will be emphasized. Students will be required to perform various waived tests and demonstrate an understanding of the necessity of accuracy and attention to detail. Students will demonstrate the use of controls, standards and laboratory protocols. Required: Instructor consent. Prerequisite: Pass CLA-101.

CLA-103 Clinical Laboratory Assistant Skills III
4 credits, Spring
Continuation of CLA-101 and 102 with emphasis on Microbiology, Clinical Chemistry and Serology/Immunology. The Clinical Laboratory Assistant Scope of Practice and Professionalism at the workplace will be discussed in detail. Required: Students must be admitted into the current CLA cohort, or instructor consent. Prerequisite: Pass CLA-102.

CLA-115 Laboratory Administrative Skills
2 credits, Winter
Designed for the clinical laboratory assistant employed in a physician’s office laboratory, instructing them in laboratory coding, billing practices, and other administrative duties, with emphasis on patient test management and professionalism. EKG techniques will be included as well as other back office skills, as required by NAACLS. Required: Instructor consent.

CLA-118 Phlebotomy for Clinical Laboratory Assistants
2 credits, Spring
Designed for the Clinical Laboratory Assistant student to instill a broad understanding of blood/serum collection and specimen handling techniques used in ambulatory and medical center laboratories and to prepare students to perform these tasks effectively and safely in the workplace. Universal and standard precautions will be stressed. The students will collect blood samples on their lab partners throughout the term. Required: Students must be admitted into the current CLA cohort, or instructor consent.

CLA-119 Phlebotomy/Laboratory/ Practicum I
3 credits, Winter
Supervised unpaid assignment in area medical center laboratories to gain practical experience. Required: Instructor consent.

CLA-120 Phlebotomy/Laboratory/ Practicum II
4 credits, Spring
Students will participate in a supervised unpaid assignment, known as a clinical practicum in area medical center laboratories to gain practical experience. A weekly seminar accompanies this course. Required: Students must be admitted into the current CLA cohort, or instructor consent. Prerequisite: Pass CLA-119.

CLA-125 Introduction to Clinical Research
2 credits, Spring
An overview of research as applied through clinical studies. Participants will learn elements of proper research techniques as conducted under the supervision of a physician or Ph.D. Required: Students must be admitted into the current CLA cohort, or instructor consent.

CLA-130 Specimen Collection
1 credit, Spring
Designed to qualify students to perform drug testing collections under U.S. Department of Transportation (DOT) regulations. The final examination will include a demonstration of collection proficiency. Specimen management, adulteration and quality assessment will be addressed. Required: Students must be enrolled in current CLA cohort, or instructor consent.
COMM
Communication Studies

Courses formerly offered under the SP/Speech prefix.

COMM-100 Basic Speech Communication
3 credits, Fall/Winter/Spring/Summer
Explores interpersonal and small group dynamics and communication skills in day-to-day formal and informal situations. Examines positive self-concept, listening skills, and clarity of expression. Designed for non-transfer students.

COMM-100A Basic Speech Communication: Principles
1 credit, Fall/Winter/Spring/Summer
Explores elements of the communication process including major influences such as self-concept, perception, and culture. Examines verbal and non-verbal modes of communication. First unit of a three-credit series; may be taken in any order. Designed for non-transfer students.

COMM-100B Basic Speech Communication: Interpersonal Relationships
1 credit, Fall/Winter/Spring/Summer
Explores interpersonal skills in day-to-day formal and informal situations. Develops strategies for effective listening behavior. Examines for building and maintaining relationships. Second unit of a three-credit series; may be taken in any order. Designed for non-transfer students.

COMM-100C Basic Speech Communication: Business Relationships
1 credit, Fall/Winter/Spring/Summer
Explores small group dynamics and communication skills in day-to-day formal and informal situations. Examines leadership styles, conflict response, and effective interview techniques. Third unit of a three-credit series; may be taken in any order. Designed for non-transfer students.

COMM-105 Listening
4 credits, not offered every term
Course analyzes listening behavior. In addition, this course emphasizes developing an understanding and appreciation of listening as a vital element in the communication process. Course includes theory and individual skill development. Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

COMM-111 Public Speaking
4 credits, Fall/Winter/Spring/Summer
Practice in organization, research and delivery of a variety of speeches. Prerequisites: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

COMM-112 Persuasive Speaking
4 credits, not offered every term
Persuasive speaking, audience analysis, study of reasoning and the basic theories of persuasion. Prerequisites: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

COMM-126 Communication Between the Sexes
4 credits, Fall/Winter
Examines ways women and men are different and similar in their communication behaviors. Traditions, myths, social roles and current issues are discussed. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

COMM-129/COMM-229 Oral Interpretation
4 credits, not offered every year
Oral interpretation of literature from the areas of prose, poetry and drama. Analyze specific literary works and communicate understanding through performance. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass COMM-111 or instructor consent.

COMM-140 Introduction to Intercultural Communication
4 credits, not offered every term
Explores the impact cultural differences have on the communication process; increases awareness of students’ own cultural behaviors. Students discover effective ways to deal with difficult situations when a cultural difference causes a problem.

COMM-150/COMM-250 Competitive Platform Speaking
4 credits, not offered every year
Advanced theory and practice in public speaking. Simulated public speaking situations, audience analysis, and rhetorical strategies will be emphasized. Students will prepare and present a variety of speeches. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass COMM-111 or instructor consent.

COMM-167/COMM-267 Parliamentary Procedure
4 credits, not offered every year
The principles and practice of parliamentary procedure to develop skills in conducting business during meetings. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Instructor consent.

COMM-212 Mass Media & Society
4 credits, not offered every term
Takes students through a critical study of the production and consumption of mass media, including television, radio, books, film, newspapers, advertising and the Internet. Students also examine the economic and social organization of mass media, the growth of new media technologies, and the relationship between media and the public. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

COMM-218 Interpersonal Communication
4 credits, Winter/Spring
The interpersonal communication process examined through lectures, reading, and exercises. Subjects include goal-setting, first impressions, conflict resolution, non-verbal messages, image building and assertiveness. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

COMM-219 Small Group Communication
4 credits, not offered every term
Theories and practices of small group communication through group discussion, reading and written exercises. Emphasis on effective group communication, leadership skills, and problem-solving in small groups. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.
COMM-227 Non-Verbal Communication 4 credits, not offered every term Explores theories and types of nonverbal behavior in relation to the creative process of human communication. Examines the influence, interpretation and/or management of such qualities as appearance, body movement, facial expression, voice, use of space, touch and time. Considers how physical environments, social roles, gender, and inter/intra-cultural beliefs and values have an effect on relationships among individuals and groups. Applies theoretical interpretations to nonverbal communication found in various forms of human expression. Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

COMM-280 Speech/CWE 2-6 credits, Fall/Winter/Spring Cooperative work experience. Provides students with on-the-job work experience in the field of communications. Required: Instructor consent & a CWE seminar.

CS

Computer Science

CS-090 Computers for New Users 2 credits, Fall/Winter/Spring/Summer Course in computers for those with very little or no computer experience. It covers the basic use of computers running the Microsoft Windows 7 operating system.

CS-091 Computers for New Users II 2 credits, Fall/Winter/Spring/Summer Continued development of skills learned in CS-090. Topics include learning intermediate features of the Microsoft Windows 7 operating systems, more work with file management, and more work with applications such as word processing using the latest version of Microsoft Word, spreadsheets using the latest version of Microsoft Excel, and presentations using the latest version of Microsoft Power-Point. Takes place in the computer lab, one student to a computer. Prerequisite: Pass CS-090 or placement in CS-091.

CS-092S Computers for New Users, Spanish 3 credits, not offered every term Este es un curso en español, para aquellas personas sin experiencia alguna en computación. Incluye el uso del ratón, la administración de archivos, introducción a Windows, la creación de documentos, utilizando el programa Microsoft Office Word, cómo enviar y recibir e-mail, y cómo navegar en el Internet. Taught in Spanish; this course requires no computer experience. Includes using a keyboard and mouse, introduces Windows, file management, using Office applications, email, and the Internet. Takes place in the computer lab, one student per computer.

CS-093S Computers for New Users II, Spanish 3 credits, not offered every term Clase en español para aquellas personas que ya tomaron la clase CS-092S o equivalente. Usted estará disponible para crear, modificar, dar formato e imprimir una hoja de cálculo sencilla utilizando el programa Microsoft Excel. Además, usted creará presentaciones en PowerPoint utilizando diferentes herramientas de diseño, incluyendo audio y video. Por último, usted aprenderá a diseñar diferentes tipos de publicaciones utilizando el programa Microsoft Publisher. For those who have taken CS-092S or equivalent. Create, modify, format, and print simple worksheets in Microsoft Excel. In addition, you will create presentations in PowerPoint using different design tools including audio and video. Finally, you will be creating simple publications in Microsoft Publisher. Prerequisite: Pass CS-092S.

CS-094S Database & Web Design, Spanish 3 credits, not offered every term Este es un curso interactivo que introduce los conceptos generales de base de datos utilizando el programa de Microsoft Access. Además, esta clase introduce conocimientos básicos necesarios para comenzar con el diseño de páginas Web. El curso incluye la creación, actualización y mantenimiento de sitios en la red internacional de datos (Internet) o en una red interna (Intranet) usando el programa Adobe Dreamweaver. This interactive class introduces basic concepts about a relational database using Microsoft Access. In addition, this course includes basic elements of beginning web page design to create, update and maintain web pages in Internet or intranet web sites using Adobe Dreamweaver. Prerequisite: Pass CS-093S or equivalent class.

CS-120 Survey of Computing 4 credits, Fall/Winter/Spring/Summer Computer competency course to familiarize students with computer concept, software applications and living online. Introductes students to computer concepts, including, but not limited to the Windows environment, Microsoft Office Applications, and the Internet. Prerequisites: Pass CS-090 or placement in CS-120; pass WR-095 or placement in WR-121.

CS-121 Computer Applications 3 credits, not offered every year Continuation of CS-120. Hands-on approach to word processing, database management, and electronic spreadsheets. Microsoft Office Suite (Word, Excel, Access, and PowerPoint.) Prerequisites: Pass CS-120 or placement in CS-121; pass MTH-060 or placement in MTH-065.

CS-125H HTML & Web Site Design 3 credits, Fall/Winter/Spring/Summer Hands-on approach to planning, design, and developing published web sites using HTML tags in a text editor. The class focuses on basic HTML coding using HTML 5 models. Hyperlinks, images, cascading style sheets, forms, accessibility and design principles will be covered, as well as tools such as site management, validators, and page editors. Recommended: Pass CS-120 or equivalent experience.
CS-125P Computer Publishing
3 credits, not offered every year
Desktop publishing using Microsoft Publisher: modifying and publishing professional documents. Presentation software using Microsoft PowerPoint: creating, modifying, and publishing slide shows.

CS-125R Podcasting
3 credits, not offered every year
Introduces audio and video recording and editing for the purposes of podcasting. Writing XML scripts. Includes hands-on projects and exercises.

CS-133S Introduction to JavaScript & Server-side Scripting
3 credits, Winter
Design, programming, testing of scripted web pages using JavaScript for client-side applications and PHP for server-side applications. Introduction to: fundamental concepts of interactive web pages and server-side connectivity. Covers the Document Object Model (DOM) and programming constructs like variables, operators, functions, control structures, exception handling. Prerequisites: Pass CS-125H or equivalent experience. Recommended: pass MTH-060 or placement in MTH-065.

CS-133VA Visual Basic for Applications I
3 credits, Spring
Using Visual Basic for Applications to develop advanced macros and application features for Microsoft Office (Word, Excel, Access, and PowerPoint.) Topics will cover VB editor, objects, properties, variables, repeating statements, debugging codes, and integrating applications. Prerequisite: Pass BA-131.

CS-133VB Visual Basic.NET I
3 credits, Fall/Spring
Hands-on approach to software design using object-oriented programming. Planning an application, building a user interface, using variables and constants, calculating, accumulating, counting, making decisions, using functions, and using menus. Prerequisites: Pass BA-131 or CS-120. Recommended: Pass MTH-060 or placement in MTH-065.

CS-135DB Microsoft Access
3 credits, Fall/Spring
Focuses on the advanced database capabilities using the latest version of Microsoft Access. Topics include design, construction, and documentation of a database management system, designing reports, forms, advanced form techniques, advanced queries, customizing tables, and creating and using an application system with macros. Recommended: Pass BA-131 and CS-120. Recommended: Pass MTH-060 or placement in MTH-065.

CS-135I Advanced Web Design with Dreamweaver
3 credits, Fall/Winter/Spring
Plan and publish standards-based, accessible web sites via a variety of tools, including the Adobe Creative Suite. Complete market and user-needs analysis to best target site content and design. Create a graphical web site mock-up, then use CSS, scripts, and multimedia to realize site goals. CS-135I emphasizes professional design techniques. Prerequisite: Pass CS-125H.

CS-135S Microsoft Excel
3 credits, Fall/Winter/Spring
Focuses on advanced spreadsheet capabilities using the latest version of Microsoft Excel. Topics include design, construction, and documentation of spreadsheets, use of templates, multiple worksheets, complex formulas, functions and filtering, Pivot Tables, advanced chart features, sorting, database capabilities, finding data, creating subtotals, using lookup tables, finding trends and forecasting, creating and editing macros, validating data, and working with controls. Recommended: Pass CS-120 or BA-131; pass MTH-060 or placement in MTH-065.

CS-135W Microsoft Word
3 credits, Winter
Focuses on advanced word processing features using the latest version of Microsoft Word. Topics include using tables, merging form letters and data source files, desktop publishing, large document capabilities including master documents and indexes, and linking and embedding objects between Office applications. Recommended: Pass BA-131.

CS-140 Introduction to Operating Systems
4 credits, Fall/Spring
Introduction to the theory behind operating systems as well as basic functions of Windows, Linux/UNIX, and Macintosh operating systems. Discussion of operating system interface with input, output, and storage devices and basic network theory. Prerequisites: Pass CS-120 or placement in CS-121; pass MTH-060 or placement in MTH-065; pass WR-095 or placement in WR-121.

CS-150 Computer Technician Orientation
3 credits, Fall/Spring
Course examines foundational computing subjects used in Computer Science and Information Technology. Topics include computer architecture, electronic logic, data representation, and programming which are used in successive Computer Science courses. Information about degrees and certifications in Computer Science and Information Technology are also covered. Prerequisites: Pass CS-120 or placement in CS-121; pass WR-095 or placement in WR-121. Recommended: pass MTH-060 or placement in MTH-065.

CS-161 Computer Science I
4 credits, Fall
Disciplined approach to algorithm development, problem-solving methods, program design, data types, control structures, and subprograms. Uses C++. Prerequisites: Pass CS-120 or placement in CS-121; pass MTH-111 or placement in MTH-112, or 4 years high school math.

CS-162 Computer Science II
4 credits, Winter
Effective methods of designing large programs. Elementary and dynamic data structures, data abstraction, object oriented programming, program correctness, verification, and testing. Requires a substantial project. Prerequisite: Pass CS-161.
CS-179 Networking I
3 credits, Winter
An introductory course in computer networking. Covers data communication basics, network models, cabling, Ethernet, remote connectivity, basic TCP/IP operation and configuration, wireless networking, and basic network security. This course, in conjunction with CS-229, covers the topics on the CompTIA Network+ exam. Prerequisite: Pass CS-150 or instructor consent.

CS-195 Flash Web Development
3 credits, Winter
Introduces the technologies behind creating an interactive, media-rich website using Adobe Flash. Topics include, but are not limited to, using the drawing tools, using the timeline, creating frame-based and tween-based animations, adding interactivity through ActionScript, and incorporating existing graphics, sound, and video files. Students will complete a portfolio of Flash creations throughout the class. Prerequisite: Pass CS-125H or equivalent experience.

CS-225 Computer End User Support
3 credits, Fall
Addresses professional and interpersonal skills needed by computer technicians who support and manage hardware and software information systems. Customer service, troubleshooting, help desk operation; customer needs analysis; technical documentation and training skills. Prerequisites: Pass CS-120 or placement in CS-121 or equivalent experience.

CS-227 Computer Hardware & Repair I
4 credits, Fall
An in-depth course in computer science hardware. Covers operational concepts, identification, installation, configuration, and troubleshooting of power supplies, motherboards, microprocessors, memory modules, disk drives, optical drives, and expansion cards. This course, in conjunction with CS-228, covers the topics on the CompTIA A+ certification exam. Prerequisite: Pass CS-140 or instructor consent.

CS-228 Computer Hardware & Repair II
4 credits, Winter
An in-depth course in Windows operating system maintenance and repair. Covers installation, configuration, maintenance, and troubleshooting of Windows. Includes troubleshooting the boot process, application and system issues, and using various backup and restore utilities and processes. This course, in conjunction with CS-228, covers the topics on the CompTIA A+ certification exam. Prerequisite: Pass CS-227 or instructor consent.

CS-229 Networking II
4 credits, Spring
Course practices the building and servicing of basic computer networks. Topics include physical media, network design, addressing, routing, switching, and management used in common. This course, in conjunction with CS-179, covers the topics on the CompTIA Network+ exam. Prerequisites: Pass CS-179 and CS-228.

CS-233S Web Application Development II
3 credits, not offered every year
Exploration of server-side programming emphasizing database-driven web site design. Uses ASP.NET to revisit general object-oriented programming constructs, create database connectivity and highly interactive web sites. XML concepts and database techniques are discussed. Prerequisites: Pass CS-133S; or pass CS-125H and CS-133VB; or pass CS-125H and CS-161.

CS-233VB Visual Basic.NET II
3 credits, not offered every year
Continuation of CS-133VB. Creating object-oriented programs. List boxes, combo boxes, printing, saving data and objects in files, arrays, accessing database files. Prerequisite: Pass CS-133VB.

CS-234A AJAX Web Development
3 credits, Spring
In-depth exploration of creating dynamic websites using Asynchronous JavaScript and XML (AJAX) technologies. Course covers the Document Object Model (DOM), basic operation of an AJAX application, XML and JSON data formats, and working with common toolkits and APIs, including jQuery and the Google API. Prerequisite: Pass CS-133S or previous HTML and programming experience.

CS-234P PHP/MySQL Web Development
3 credits, Spring
Use PHP and MySQL to develop dynamic web sites for use on the Internet. Develop web sites ranging from simple online information forms to complex online applications. Introduce programming fundamentals including variables, control structures, functions and objects. Applications developed use MySQL as the backend database and will explore database connectivity, querying, and security. Prerequisite: Pass CS-125H or equivalent experience. Recommended: Pass CS-275.

CS-240L Linux Administration
4 credits, Spring
Hands-on system administration of Linux. Installation, system configuration, file management, user and group account management, disk formatting and partitioning, local file systems, system startup and shutdown, text editing, run levels, backup and restore, printing, basic local area networking, and memory management. Prerequisite: Pass CS-140.

CS-240M MacOS Administration
3 credits, Winter
Designed to prepare students for the challenges they will face as a networking professional supporting multiple operating systems. Lectures, projects and exercises reinforce skills as they are learned. Specific topic coverage includes: Installation and Setup, User Accounts, File Systems, Data Management, Applications, Network Configuration, Network Services, Peripherals, Startup and Troubleshooting. Prerequisite: Pass CS-140.
CS-240L Windows Desktop Administration
3 credits, Winter
An introduction to the current Windows desktop client operating system. Topics include: installation, managing disks and file systems, file access security, users, profiles and policies, groups, security, backup, remote access, printing and troubleshooting. Prerequisite: Pass CS-140.

CS-245 Project Management—Information Systems
4 credits, not offered every term
Study practical approaches for managing, planning, organizing and implementing information systems projects using modern management techniques. Complete hands-on projects requiring management of project resources, scope, timeline costs, scheduling, human and other resources. Use Microsoft Project and other project monitoring tools. Project management is a broad term that can include many areas of business. Recommended: CS-133VB, BA-120, and BT-177.

CS-260 Data Structures
4 credits, Spring
Continuation of CS-162. Includes linear, linked lists, trees, abstract data types, searching and sorting algorithms, and their analysis. Prerequisite: Pass CS-162.

CS-275 Database Design
3 credits, Winter
Focuses on design of a relational database management systems (RDMS). Topics will include database development using the a) requirement, b) design, c) implementation model, database theory from flat table design to relational systems, entity-relationship models, one-to-one, one-to-many, and many-to-many relationships, referential integrity, normalization of tables, database programming and querying with SQL, and database security. Although other platforms may be demonstrated, the majority of work will be done with MySQL Server. Prerequisites: Pass CS-120 or placement above CS-120 or equivalent experience. Required: 4GB or larger USB hard drive.

CS-276 Advanced SQL
4 credits, not offered every term
Focuses on design, development and implementation of SQL programming for all types of relational database applications including client/server and Internet databases. Learn to write complicated interactive and embedded SQL statements and learn the implications of multi-user database applications. Recommended: Two terms of programming language sequencing. Prerequisite: CS-275

CS-279W Windows Server Administration
4 credits, Spring
Managing a Microsoft Windows server network. Topics include: Network protocols, Active Directory, performance issues, managing web resources, security, and disaster recovery. Prerequisites: Pass CS-179 and CS-240W.

CS-280 Computer Science/CWE
3-6 credits
Fall/Winter/Spring/Summer
Cooperative work experience provides supervised work experience to supplement the school experience from the academic classroom environment. Examples would be providing user support, work with computer applications or programming languages, install or manage PC computer systems, and developing websites. Can be repeated for up to 9 credits. Required: Instructor consent & a CWE seminar. Prerequisites: Pass BA-131, CS-140 and CS-150.

CS-284 Network Security
3 credits, Winter
Comprehensive overview of network security. Covers communication security, infrastructure security, cryptography, operations/organizational security, disaster recovery, business continuity, and computer forensics. Prerequisite: Pass CS-279W.

CS-288W Windows Network Administration
4 credits, Winter
This course practices network administration and design using Windows Server and other operating systems. Topics include TCP/IP protocols and services such as v4 and IPv6 addressing, DHCP, DNS, routing, filtering, network protection, and remote access. Prerequisite: Pass CS-279W.

CS-289 Web Server Administration
4 credits, Spring
An introduction to Apache and Microsoft Internet Information Server. Covers installation, administration, securing, and troubleshooting, as well as the http, https, and ftp protocols. Prerequisites: Pass CS-240L and CS-240W.

CS-297N Network Capstone
4 credits, Spring
Affords students the opportunity to put all the discrete information learned from their program classes together towards the completion of an enterprise computer project.

CS-297W Website Capstone
3 credits, Spring
The capstone course for the web development AAS programs. Provides the opportunity to function in a production design environment, work cooperatively with students from other focus areas, and research emerging website technologies. Emphasis will be placed on client interaction, project teams, and accountability, as well as the development of a professional portfolio web site or completion of a research project in an emerging web-related technology. Prerequisites: Pass CS-195 and CS-133S; or pass CS-195 and CS-135I.

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

Cooperative Work Experience
CWE-281 Cooperative Work Experience Seminar I
0 credit, Fall/Winter/Summer
The seminar provides an opportunity to develop the career management skills necessary to obtain and sustain employment. Prepares students for career success. Corequisite for program specific CWE courses.
CWE-282 Cooperative Work Experience Seminar II
0 credit, Fall/Winter/Spring/Summer
The seminar provides an opportunity to develop the career management skills necessary to advance a career. Uses case studies and special projects. Prerequisite: CWE-281. Corequisite for program specific CWE courses.

CWE-283 Cooperative Work Experience Seminar III
0 credit, Fall/Winter/Spring/Summer
Advanced seminar that provides an opportunity to conduct an independent study of the career management skills necessary to develop advanced skills in obtaining, sustaining, and advancing employment. Prerequisite: CWE-282. Corequisite for program specific CWE courses.

CWE-284 Cooperative Work Experience Seminar IV
0 credit, Fall/Winter/Spring/Summer
Applicable in a limited number of programs. Corequisite for program specific CWE courses.

Discipline-Specific Cooperative Work Experience Classes:
Accounting.................................. BA-280
Anthropology ............................... ANT-280
Art ........................................ ART-280
Auto Body Refinishing .................. ABR-180
Auto Collision Repair/Refinishing.... AB-280
Auto Mechanics ........................... AM-280
Biology ...................................... BI-280
Business Administration .............. BA-280
Business Management .................. BA-280
Business/Accounting & Accounting Clerk.............................. BA-280
Business/Marketing ................. BA-280
Business/Administrative Office Professional/Administrative Office Assistant........................ BA-280
Career Development Internship....... HD-180
Computer & Network Administration................................. CS-280
Computer Science .......................... CS-280
Corrections ................................ CJA-280
Crime Analysis ............................. CJA-280
Criminal Justice/Corrections ......... CJA-280/281
Digital Multimedia Communications........................................ DMC-180/DMC-280
Early Childhood Education ........ ECE-280/HDF-280
Education.................................... ED-280
Electronic Publishing ...................... BA-280

Electronics Engineering Technology ........................................... SM-280
Employment Skills Training ............ EST-180
Energy & Resource Management . ERM-180
English ..................................... ENG-280
Fire Science ................................ FRP-180/280
Geology ..................................... G-280
Geography .................................. GEO-280
Gerontology ................................ GRN-280
GIS (Geographic Information Systems) ............................................... GIS-280/281
Health ...................................... HE-280
Hisory ...................................... HST-280
Horticulture/Urban Agriculture Farm ............................................... HOR-280/281/282
Horticulture.................................. HOR-280/281/282
Human Resource Management ....... BA-280
Human Services/Generalist I ........... HS-280
Human Services/Generalist II .......... HS-280
Human Services/Generalist III ......... HS-280
Journalism/Public Relations ........... J-280/J280A
Juvenile Corrections ..................... CJA-280
Landescape ................................ HOR-280/281/282
Manufacturing ............................. MFG-280
Marketing ................................. BA-280
Mathematics ............................... MTH-280
Microelectronics Systems Technology................................................ SM-280
Music Technology ........................ MUS-280
Music ....................................... MUS-280
Occupational Skills Training .......... OST-180
Paraduader ................................ ED-280
Physical Education ........................ PE-280
Political Science ........................... PS-280
Professional Truck Driver ............. TTL-180
Project Management ................. BA-280
Psychology .................................. PSY-280
Religion ..................................... R-280
Renewable Energy Technology ..... RET-280
Retail Management ........................ BA-280
Sociology .................................. SOC-280
Spanish ..................................... SPN-280
Speech ....................................... COMM-280
Speech Arts ............................... TA-280
Sociology .................................. SOC-280
Tutoring .................................... HD-280
Water & Environmental Technology ............................................... WET-180/280
Web Design ................................ CS-280
Welding Technology ..................... WLD-280

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

Dental Assistant
DA-101 Dental Radiology I
3 credits, Fall
Introduction to history and principles of dental radiology, terminology, basic physics associated with x-rays, biological effects of x-rays, anatomical landmarks, and infection control. Includes practical instruction in radiation health and safety, types of film and holders, darkroom processing, film mounting, use of x-ray equipment, infection control techniques, disposal of hazardous waste, and exposure techniques on x-ray manikins. Required: Instructor consent.

DA-102 Dental Radiology II
1 credit, Winter
Advanced principles of radiology techniques emphasizing extra-oral radiography, techniques for children, patients with special needs, occlusal examinations, identification of radiographic abnormalities, medical health history and infection control. DANB clinical proficiency criteria will be followed to prepare for Oregon Clinical Radiologic Proficiency Exam. Students meeting radiographic competency on x-ray manikin will begin preparation for radiologic proficiency exam. Required: Instructor consent. Prerequisite: Pass DA-101 with a C or better.

DA-104 Clinical Procedures I
3 credits, Fall
Introduction and practice of basic chairside assisting and general procedures which are taught in a dental lab setting. OSHA and Hazard Communication guidelines are practiced. Includes lectures and discussion of the dental professional, dental law, ethics, HIPAA, and patient records. Measuring and recording of vital signs are also covered. Required: Instructor consent.
DA-105 Clinical Procedures II  
3 credits, Winter  
Furthers knowledge of chair side skills. Covers expanded function procedures. Introduces patient health education, oral hygiene instruction, fluoride treatment and plaque-related diseases, sealants, and coronal polishing. Required: Instructor consent. Prerequisite: Pass DA-104 with a C or better.

DA-106 Clinical Procedures III  
2 credits, Spring  
Introduction to basic procedures, tray set-up, and dental materials of dental specialties: pedodontic, orthodontic, periodontics, oral surgery, and endodontics. Continue to perfect EFDA skills. Preclinical instruction in amalgam and composite polishing will be taught. Required: Instructor consent. Prerequisite: Pass DA-105 with a C or better.

DA-107 Dental Materials I  
3 credits, Fall  
Introduction to physical and chemical properties of dental restorative materials and dental cements. Includes manipulation, storage and disposal of hazardous dental materials and dental cements. Amalgam and composite procedures are taught and practiced in a laboratory setting. Required: Instructor consent.

DA-108 Dental Materials II  
2 credits, Winter  
Introduction to properties, uses and manipulation of impression materials, gypsum products. Includes instrumentation and procedures for fixed and removable prosthetics, and polishing of removable appliances. Fabrication of custom trays, bleaching trays, and provisional restoration will also be covered. Required: Instructor consent. Prerequisite: Pass DA-107 with a C or better.

DA-110 Clinical Practicum I  
1 credit, Fall  
Clinical practicum begins in the seventh week of first term. Apply basic dental assisting procedures taught in weeks one through six. All protocols are followed to allow for student and patient safety and protection. A minimum of eight supervised unpaid hours per week is required for term one practicum. Participate in two seminars held during the term. Required: Instructor consent.

DA-115 Dental Science  
1 credit, Fall  
Introduction to anatomy and physiology including major body systems, head and neck anatomy, oral embryology and histology, tooth morphology, oral pathology, and dental charting. Required: Instructor consent.

DA-120 Clinical Practicum II  
5 credits, Winter  
Supervised unpaid practice and improvement of clinical skills taught in clinical procedures, dental materials, and radiology. Covers advanced EFDA skills. Implement infection control protocols. Introduce basic business office procedures. Ten hours of community service will be required. Participate in three seminars during the term: orientation seminar, mid-term seminar, and concluding seminar. May not be challenged. Required: Instructor consent. Prerequisite: Pass DA 110 with a C or better.

DA-125 Dental Infection Control  
1 credit, Fall  

DA-130 Clinical Practicum III  
8 credits, Spring  
Supervised unpaid practice and improvement of advanced clinical skills in all areas of chair side dental assisting, laboratory procedures, specialties, radiology and EFDA procedures. A minimum of forty-four hours performing business office procedures will be required. Responsible to meet ten hours of community service. Participate in three seminars during the term: orientation seminar, mid-term seminar, and concluding seminar. Required: Instructor consent. Prerequisite: Pass DA-120 with a C or better.

DA-135 Pharmacology/Medical Emergencies  
1 credit, Winter  
Introduction to pharmacology, uses, types, purpose, and composition of drugs used in dentistry. Medical emergency signs/symptoms, vital signs, emergency equipment, and protocol will also be covered. Required: Instructor consent.

DA-145 Dental Office Procedures  
2 credits, Spring  
A specialized study of dental business office procedures associated with desk and dental office management responsibilities. Includes employment strategies. Required: Instructor consent. Prerequisite: Pass CS-120 with a C or better.

DMC Digital Multimedia Communications

DMC-100 Introduction to Media Arts  
3 credit, Fall/Winter/Spring  
Presents an overview of career opportunities in the media industry. Introduces basic principles common to success in the media industry, common media industry entrance strategies and the history of the industry from film to online media. In addition this course will cover basic theories behind what shapes and drives the media industry.

DMC-104 Digital Video Editing  
4 credits, Fall/Winter/Spring  
Students will utilize video editing skills. These skills will include logging and capturing raw video, assembly of shots on a time line, and the use of effects in the creation of a final video sequence. Along with text generation and video compositing, this course will offer students an in-depth overview of the video editing process. Course will explore the history of film editing and the theory behind various forms of film and video editing. Lab component included.
DMC-106 Animation & Motion Graphics I
3 credits, Fall/Winter
Introduction to the fundamentals of animation and motion graphics design. This project-based course will explore experimental and new technological approaches to creating digital effects and animation for video and web-based applications. Recommended: Previous experience with computer graphics and digital video. Students will learn the basics of After Effects to create successful motion graphics projects. Recommended: ART-221, ART-225, ART-226, DMC-104.

DMC-107 Animation & Motion Graphics II
3 credits, Winter
This project-based course will explore intermediate aspects of experimental and new technological approaches to creating digital effects and animation for video and web-based applications. Students will learn intermediate aspects of After Effects to create successful motion graphics projects. Previous experience with computer graphics and digital video is recommended. Prerequisite: ART-107/DMC-107. Recommended: ART-221, ART-225, ART-226, DMC-104.

DMC-108 Animation & Motion Graphics III
3 credits, Spring
Continuation of the process of animation and motion graphics design. This project-based course will explore advanced aspects of experimental and new technological approaches to creating digital effects and animation for video and web-based applications. Previous experience with computer graphics and digital video is recommended. Students will learn advanced aspects of After Effects to create successful motion graphics projects. Prerequisite: ART-107/DMC-107. Recommended: ART-221, ART-225, ART-226, DMC-104.

DMC-147 Music, Sound & Moviemaking
1 credit, Fall/Winter/Spring
Presents the basic components of designing, shooting, recording, editing, and scoring movies as well as the history and theory that has led to the current moment of film production.

DMC-180 Digital Multimedia Communications Internship
1-12 credits, Fall/Winter/Spring
The internship is an opportunity to develop entry level skills in a specific occupational area and to practice the basic career management skills necessary to obtain, sustain, and advance employment. A Training and Evaluation Plan is developed and managed in consultation with the student, internship supervisor, and faculty. Required: Instructor consent & a CWE seminar.

DMC-190 Digital Multimedia Communications Portfolio Project I
1-4 credits, not offered every term
Provides students the opportunity to combine their skills, knowledge, and special interests in the planning, production, and presentation of an original finished product representative of any one of the focus areas included in the Digital Multimedia Communications Program.

DMC-191 Digital Multimedia Communications Portfolio Project II
3 credits, not offered every term
Provides students the opportunity to combine their skills, knowledge, and special interests in the revision, refinement, and further development of an original finished product representative of any one of the focus areas included in the Digital Multimedia Communications Program, and to collaborate with peers in the process of integrating their work with one additional DMC focus area. Prerequisite: Pass DMC-190.

DMC-192 Digital Multimedia Communications Portfolio Project III
4 credits, not offered every term
Provides students the opportunity to combine their skills, knowledge, and special interests in the production and production management of an original portfolio project that reflects full integration of DMC focus areas. Prerequisite: Pass DMC-191.

DMC-194 Introduction to Film
4 credits, not offered every term
Viewing, discussion, and analysis of films from a variety of eras and cultures. Students will learn to analyze a film beyond its surface meaning, drawing on film aesthetics, technology, history, and theory. The interpretive and critical thinking skills they develop can be applied to a variety of modern media. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

DMC-195 American Film
4 credits, not offered every term
The history and theory of American filmmaking from 1895 to the present. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

DMC-205 Directing for Film & Video
4 credits, Winter
Offers students interested in filmmaking the skills needed to successfully direct performances specifically for the screen. Lab component included. Prerequisite: Pass WR-121 or instructors consent.

DMC-222 Advanced 2D Animation: Design & Techniques
3 credits, not offered every spring
Covers advanced principles of animation using Adobe Flash and other software. The course will emphasize professional workflow and techniques of animation production for multimedia platforms. Prerequisites: Pass ART-221, equivalent experience, or instructor consent.

DMC-230 Documentary & Experimental Filmmaking
4 credits, not offered every term
Introduces the concepts and fundamentals of documentary and experimental filmmaking. This lecture/studio course will explore traditional and new technological approaches to creating digital documentaries and avant-garde film. Lab component included. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121; pass DMC-104 or previous experience with film studies and digital video.
DMC-242 Field Recording & Sound Design for Media
1 credit, not offered every term
Offers students interested in recording and sweetening audio for film an opportunity to work with student film crews during the shooting and editing process. Corequisite: DMC-265.

DMC-247 Music, Sound, & Moviemaking
3 credits, not offered every term
Introduction to music and sound as related to moviemaking. Students will have the opportunity to create and assemble music and sound for video into a finished product. Explores the basic components of music and sound as they relate to commercial film/video production.

DMC-264 Digital Filmmaking
4 credits, Winter
Explores the process of translating a written script into a digital film via pre-production, shooting, and post-video production. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121 or instructor consent.

DMC-265 Advanced Digital Filmmaking
4 credits, Spring
This course applies filmmaking skills to the production of a short film from a written script. Lab component included. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass DMC-264 or instructor consent.

DMC-280 Digital Multimedia Communications/CWE
2-6 credits
Fall/Winter/Spring/Summer
Cooperative work experience. Provides students with on-the-job work experience in the field of media studies. Required: Instructor consent & a CWE seminar.

DMC-295 Revolutionary Film
4 credits, not offered every term
Focuses on revolutionary styles of filmmaking from around the world that continue to have an effect on how movies are made today. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

DMC-296 Adaption: Literature into Film
4 credits, not offered every year
Explores the art of transforming literary text into films. Focuses on various literary genres such as the novel, the short story, the play, and the nonfiction event, and analyzes the process of adapting these stories. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

EC

Economics

EC-200 Introduction to Economics
4 credits, not offered every term
General introduction to microeconomics as applied to individual decision-making units and to macroeconomics as applied to the operation of the economy as a whole. Course topics include economic decision making, economic systems, supply and demand models, price determination, elasticity, household income, business ownership, profit maximization, production functions and costs, and competition and market structures. Also includes goals and problems of the macro economy such as fiscal policy and budgets, the role of financial institutions, money creation, and monetary theory and policy. Recommended: Pass RD-090 or placement in RD-115.

EC-201 Principles of Economics: MICRO
4 credits, Fall/Winter/Spring
Focuses on micro-economic theory dealing with the behavior of individuals and individual firms within different market structures. Covers concepts of competition, consumer decisions, the use price of economic resources, and international trade. Recommended: Pass RD-090 or placement in RD-115; pass MTH-095 with a C or better or placement in MTH-105 or MTH-111.

EC-202 Principles of Economics: MACRO
4 credits, Fall/Winter/Spring
Introduction to economic theory, policy, and institutions. Focuses on macro-economic theory, scarcity, production, money, unemployment, inflation, and international finance. Recommended: Pass RD-090 or placement in RD-115; pass MTH-095 with a C or better or placement in MTH-105 or MTH-111.

ECE

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

Early Childhood Education

ECE-121 Observation & Guidance I in ECE Settings
4 credits, Winter
Designed to help students explore in depth observation of and to learn various child guidance techniques for children PK-4th grade. Students will be provided with techniques to assist them in the ongoing guidance challenges that arise every day in their classrooms. Included are the issues of family values and how they impact one’s beliefs as it relates to discipline and guidance resolutions (with emphasis on a strengths-based system).

ECE-130 Introduction to Child Development Associate
1 credit, not offered every term
Designed to provide students with an overview of the requirements involved in obtaining a CDA (Child Development Associate) national credential, the purpose of which is to enhance the quality of early childhood care and education by defining, evaluating and recognizing the competence of child care practitioners in home or school-based settings.
ECE-131 Physical Activity/Movement
in ECE Programs
1 credit, not offered every term
Designed to help students explore the various ways that physical development and movement can be integrated in the “whole” curriculum. The purpose of the course is to guide early childhood educators to incorporate daily developmentally appropriate activity experience into this curriculum, which could have the potential to shape the lives of children in becoming physically active and healthy for life.

ECE-132 Positive Child Guidance in ECE
1 credit, not offered every term
Designed to help students focus on discipline training techniques, with an emphasis on helping children think for themselves, while becoming more responsible and respectful. Participants receive assistance in understanding the goals behind misbehavior in children and attaining feelings of accomplishment in their work with children.

ECE-133 Infant-Toddler Development
1 credit, not offered every term
Designed to help students understand the early stages of growth, including early brain development. Topics covered are the development of a warm, welcoming environment, daily routines and activities, responding to challenging behaviors and building the important relationship with families.

ECE-134 Health & Safety Issues in ECE
1 credit, not offered every term
Designed to help participants promote children’s physical and socio-emotional development by preventing health problems, responding to sick children and encouraging young children to develop good nutrition and other health and safety habits. Recognizing and reporting child abuse and neglect is included.

ECE-135 Self-Esteem in the ECE Classroom
1 credit, not offered every term
Covers the feelings of love, self-worth, trust, competency, and even power that begins to form long before the child has the capacity to express them in words. This course assists participants in understanding the importance of facilitating children’s feelings of self-esteem, while focusing on the nurturing needs of the children.

ECE-136 Observing & Recording Children’s Behavior
1 credit, not offered every term
Designed to assist early childhood care and education practitioners in constantly observing children. They will practice making objective, factual observations of children, which will then be used for assessment and planning purposes.

ECE-137 Developing the Classroom Environment
1 credit, not offered every term
Assists participants in organizing both the indoor and outdoor environments to encourage play and exploration. Topics include: arrangement equipment; planning and implementing a schedule that responds to the changing needs of children. This will include selecting materials that demonstrate respect for individual children’s sex, family, language and cultural group.

ECE-138 Family-School Relationships
1 credit, not offered every term
Helps participants establish positive associations with families, including building trusting and supportive relationships. Children thrive when family members and program staff collaborate in the process of educating and caring for young children. Course work includes strategies for communicating with parents and creating an environment that welcomes families.

ECE-139 Program Management in ECE
1 credit, not offered every term
Assists participants in planning and evaluating their program’s specific goals (short and long term) for working with children and their families. Participants will share resources and have the opportunity to discuss weekly planning forms, how to individualize/adapt forms for children with special needs, etc.

ECE-140 Preschool Development
1 credit, not offered every term
Helps participants explore how to develop “richer” learning environments, so there are more concrete opportunities for children to expand their learning during the preschool years. Included are all the developmental domains: physical, socio-emotional, cognitive and language/literacy.

ECE-141 Outdoors & Children’s Learning
1 credit, not offered every term
Participants will develop ways to incorporate children’s growth and learning in whatever outdoor environment is accessible, by integrating all curriculum areas: dramatic play, music and movement, art, science, math, etc.

ECE-150 Introduction to Early Childhood Education & Family Studies
3 credits, Fall
Focuses on the history of early childhood education and the prominent theorists that have significantly contributed to the field. The types of programs that serve young children, birth-age 8, and their families will be examined. State and national standards in early childhood education and family studies will be explored.

ECE-154 Language & Literacy Development
3 credits, Winter
Focuses on language and literacy development of children from birth - age 8. The research foundation and components of language and literacy development will be examined. Practical strategies for promoting optimal development will be emphasized.

ECE-173 Preschoolers & Loss: Divorce and Death
1 credit, Fall
Designed to help participants explore the profound effects that loss from divorce or death can have on young children. The effects of such loss are examined, including common developmental outcomes: social, emotional, cognitive, and physical. Strategies for supporting children and their families through such difficult times of separation are researched.
ECE-177 Maximizing the Outdoors in ECE Curriculum
3 credits, Spring
Students will learn how to plan, create, and implement effective outdoor learning experiences. Students will explore the benefits of using the outdoors to build a child's interest in the environment and expand understanding of the world. Students will design an outdoor learning space, create a portfolio of fieldtrip destinations, and develop activities that enhance a child's development in the four domains while fostering divergent thinking and creativity. Prerequisite: Pass ECE-240 or instructor consent.

ECE-179 The Professional in Early Childhood Education & Family Studies
2 credits, Spring
Focuses on the role of the professional in Early Childhood Education (ECE) and is individualized to meet the unique professional development needs of each student. Students working on their Child Development Associate (CDA) credential will receive guidance on compiling the resource file, while students pursuing their ECE AAS will receive information and assistance in applying in the Oregon Registry.

ECE-209 Theory & Practicum
3 credits, Winter
Develops leadership potential through classroom discussion/field experience at the CCC on-site child care center. Students will gain experience and become oriented to various roles and responsibilities of the early childhood care and education practitioner; work with young children in an organized setting; assist with supervision of observation/assessment and guidance techniques.

ECE-221 Observation & Guidance II in ECE Settings
4 credits, Fall
Designed to help students explore in greater depth the observation of PK-4th grade within the classroom environment. In this more advanced course, the student focuses on observation and guidance techniques for observing groups of children and addresses challenging behaviors and other issues within the early childhood environment. The practitioner's role in using observation to promote his/her own development and to assist in the development of the children is explored in depth. Prerequisite: ECE-121.

ECE-235 Nutrition, Music & Movement
3 credits, Fall
Provides the knowledge and skills to work effectively with children and their families to help combat the prevalence of childhood obesity, which plays a major role in how they grow, develop and learn. Participants will explore various ways of integrating nutritional health-related activities into the daily routine. Special emphasis will be placed on the inclusion of music and movement, which will connect to the total curriculum in developmentally appropriate ways. The development needs of individual children will be taken into consideration, along with the cultural context.

ECE-239 Helping Children & Families Cope with Stress
3 credits, Spring
Explore stressors in society that can affect children and families; the effects of stress on children and families and ways to help them cope.

ECE-240 Lesson & Curriculum Planning
3 credits, Winter
Plan daily/weekly activities for early childhood care and education programs. Includes methodologies and materials to be used in planning programs which encompass the whole child's creative learning needs: emotional, social, cognitive, and physical.

ECE-280 Early Childhood Education/CWE
3 credits, Spring

ECE-289 The Project Approach in Early Childhood Education
1 credit, Winter
Designed to help participants explore in depth The Project Approach methodology. They will become familiar with the steps involved in setting up this integrated approach to learning within their own classroom, while acquiring knowledge on how this study method supports young children's development in all domains: social, emotional, cognitive, physical, and language-literacy.

ED

Education

ED-100 Introduction to Education
3 credits, Fall/Spring
Examines teaching as a profession. Provides opportunities for direct experience with, and analysis of, educational settings. Explores current issues in education and characteristics of effective schools.

ED-113 Instructional Strategies in Reading and Language Arts
3 credits, Fall
Introduces skills and techniques applied in supplemental reading instruction with elementary age students. Includes reading for meaning using the four cueing systems: comprehension, strategies, developing sight/meaning, vocabulary, connecting reading/writing, understanding appropriate uses of graphophones.
ED-114 Instructional Strategies in Math & Science
3 credits, Spring
Introduces the development of math and science concepts and presents a systematic approach to math and science instruction. Students learn to link math and science instruction and assessment to state content standards.

ED-130 Comprehensive Classroom Management
3 credits, Spring
Provides current theory and methodology for managing small and large groups of students so that students choose to be productively involved in instructional activities. Covers the four major factors or skill areas of effective classroom management: 1) understanding students’ personal/psychological and learning needs, 2) establishing positive adult-student and student-student relationships, 3) implementing instructional methods that facilitate optimal learning, and 4) using organizational and group management methods that maximize positive student behavior and learning.

ED-131 Instructional Strategies
3 credits, Fall
Focuses on the components of effective instruction. Students will design standards-based activities that integrate multiple content areas, address the instructional needs of diverse learners and include appropriate strategies for assessment.

ED-150 Creative Activities for Children
3 credits, Fall
Focus is on understanding and implementing developmental approach to creative activities for young children; involves hands-on experience with a variety of mediums including art, music, movement, and creative dramatics.

ED-169 Overview of Students with Special Needs
3 credits, Winter
An introduction to the disabling conditions of students with special needs and their implications in school settings. Defines and identifies intervention strategies for disabilities covered under federal law.

ED-200 Foundations of Education
3 credits, Winter
Provides an overview of the American Educational System, including historical, legal and philosophical foundations. Students will explore the governance of local schools and districts and will consider the roles and ethical obligations of professional educators.

ED-229 Learning and Development
3 credits, Winter
Addresses theory regarding human development, intelligence, motivation, and the learning process. Students learn to apply strategies and techniques derived from these theories.

ED-235 Educational Technology
3 credits, Summer
Trains students in the preparation and use of media and technology in school settings. Students will develop an understanding of the role of media in learning and methods for incorporating media in instruction.

ED-246 School, Family and Community Relations
4 credits, Spring
This course provides the knowledge and skills to work effectively with families and community professionals in early childhood education (Pre-K - 4th grade). Emphasis is on building and maintaining positive relationships to foster cooperation and mutual respect between early childhood professionals and the families of the children with whom they are working.

ED-254 Instructional Strategies for English Language Learners
3 credits, Spring
Examines pedagogical and cultural approaches which lead to successful acquisition of English language skills and content knowledge.

ED-258 Multicultural Education
3 credits, Spring
Covers the philosophy, activities, and techniques appropriate to a culturally sensitive classroom. Students will develop an understanding of the impact of culture on individual perception and learning and group dynamics.

ED-270 Practicum I/CWE
4 credits, Fall
Focuses on field experience in a variety of classroom activities directly related to assisting and supervising children in school settings. Allows students to apply knowledge, methods, and skills gained from education courses. The seminar covers classroom experience, problem-solving techniques, and materials. Required: Instructor consent. Prerequisites: ECE-280 or ED-280.

ED-271 Practicum II/CWE
4 credits, Winter
Focuses on field experience for students in a variety of classroom activities paralleling duties regularly assigned to educators supervising children in school settings. This course allows students to apply knowledge, methods, and skills gained from education courses. The seminar covers classroom experience, best practices and assessment techniques. Required: Instructor consent. Prerequisite: ED-270.

ED-272 Practicum III/CWE
4 credits, Spring
Focuses on field experience for students in a variety of classroom activities paralleling duties regularly assigned to educators supervising children in school settings. This course allows students to apply knowledge, methods, and skills gained from education course. The seminar covers continuing observation/assessment, assisting the teacher in implementing an integrated approach to curriculum with attention paid to special needs children. Required: Instructor consent. Prerequisite: ED-270.

ED-280 Practicum/CWE
2-6 credits, Fall/Winter/Spring
Supervised practicum in a school setting. Students will utilize and develop knowledge, skills and attitudes relevant to working in a school and with children. Required: Instructor consent and successful completion of or current enrollment in ED-100.
**EET**

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

**Electronics Engineering Technology**

Courses listed with the EET prefix are the main core classes for the Electronics Engineering Technology program. For additional information contact the Manufacturing department at 503-594-3318.

**EET-112 Electronic Test Equipment & Soldering**

3 credits, Fall

Provides basic understanding, operation and set-up of electronic test equipment. Students will set-up, operate, and make measurements using meters, function generator, digital storage oscilloscope and logic analyzer and solder to IPC 610A standards.

**EET-127 Semiconductor Circuits I**

4 credits, Spring

Introduction to the basic concepts of semiconductor devices and the fundamental principals of the device operation. Industry standard devices will be used. Prerequisite: EET-137.

**EET-137 Electrical Fundamentals I**

4 credits, Fall

Introduction to basic concepts of voltage, current, resistance and their relationships in DC circuits. Analysis of series, parallel and series-parallel circuits will be made using Ohm’s and Kirchhoff’s laws and DC Network theorems. Recommended: Completion of MTH-050 or higher.

**EET-139 Principles of Troubleshooting I**

2 credits, Winter

Emphasizes theories and practices useful in troubleshooting failures in any application. Focuses on the overall philosophy and strategy of troubleshooting, as opposed to detailed tactics of specific applications. Recommended: Completion of MFG-109 or MFG-209.

**EET-141 Electrical Fundamentals II**

4 credits, Winter

Introduction to basic concepts of source conversion and current sources. Network theorems, inductors, capacitors, magnetics, and transient analysis of RC and RL circuits will also be covered. Prerequisite: EET-137.

**EET-142 Electrical Fundamentals III**

4 credits, Spring

AC circuits analysis, peak, average, RMS, and peak-to-peak voltages in relation to AC circuits. Power, energy, frequency, and transformers are covered. Prerequisite: EET-141.

**EET-157 Digital Logic I**

3 credits, Winter

Introduction to digital logic principles, numbering systems and conversions and gate operations. Using principles, circuit analysis will be used to minimize logic networks. Industry standard devices will be used. Recommended: Completion of EET-137 and MTH-050.

**EET-215 Electromechanical Systems I**

2 credits, Fall

This course emphasizes applied electromechanical principles. The theory and application of force, work, torque, energy and power transformers are explored. Covers motion control systems, basic relay circuits and sensors, stepper and servo motors and power transmission systems. Introductory mechanics area also covered, including simple machines and an introduction to static and dynamic forces. Required: Current enrollment in or successful completion of EET-137 or MFG-130.

**EET-227 Semiconductor Circuits II**

3 credits, Fall

Second in series concentrating on the application, design and circuit analysis of transistor amplifying and switching circuits. Industry standard devices will be used. Prerequisite: EET-127.

**EET-230 Lasers and Fiber Optics**

3 credits, Spring

This course focuses on basic theory and practice of laser and fiber optics. Students study optical fiber, optical components, testing and instrumentation, optical networks, etc. as well as general characteristics of lasers, laser excitation, semiconductor lasers, etc.

**EET-239 Principles of Troubleshooting II**

2 credits, Fall

Covers advanced applications of diagnosis, service, maintenance and repair of systems. Also includes preventative maintenance, applied statistical process control and RF power generation. Recommended: Completion of EET-139.

**EET-250 Linear Circuits**

3 credits, Winter

Introduction to the operation and functions of operational amplifiers and linear devices. Design and circuit analysis of op-amps, comparators, converters and special purpose linear devices. Industry standard devices will be used. Prerequisite: EET-137. Recommended: Completion of EET-127.

**EET-252 Control Systems**

3 credits, Winter

Covers basic control system and subsystems used in the electronics industry including programmable controllers, sensors, transducers, motion and motor control systems. Recommended: Completion of EET-157 and EET-127.

**EET-254 Introduction to Microcontrollers**

4 credits, Winter

Introduction to processor architecture and microcontrollers. Internal structure, registers, busses, control unit. Clock, machine and instruction cycling timing, interrupts and DMA. Instruction set, mnemonics, functions, and assembly language programming. Interfacing to external memory and I/O on-chip peripherals. Prerequisite: EET-157; Recommended: Completion of EET-257.

**EET-257 Digital Logic II**

4 credits, Spring

Bus systems and computer peripherals and systems using latches, registers, counters, and memory circuits are developed and analyzed. Prerequisite: EET-157.
EL

Study Skills

See also Reading (RD)

EL-085 Study Skills for Math
1 credit, not offered every term
Focuses on study strategies specific to math, including note taking; reading math textbooks; preparing for, taking, and analyzing math tests. Addresses math anxiety, memory techniques and effective habits for success in math. Corequisite: MTH-020.

EL-090 Applied Study Skills
3 credits, Fall/Winter
Emphasizes practical study skills for college students. Strategies for organizing study materials and time, remembering information, studying textbooks and taking lecture notes will be applied. Methods of preparing for tests, taking tests, and managing online course components such as Moodle are addressed. Prerequisites: Placement in RD-080.

EL-103 Taking Effective Notes
1 credit, not offered every term
Designed to help students develop effective note-taking skills. Several note-taking systems are introduced and practiced.

EL-111 College Study Skills
3 credits, Fall/Winter/Spring
Emphasizes time management, listening/ note-taking, testing skills/anxiety, library resources, learning styles, study/reading textbooks, concentration. Prerequisite: Placement in RD-090.

EMT

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

Emergency Medical Technology

EMT-101 EMT Basic Part I
5 credits, Fall/Winter/Summer
Develops skills and training at the basic life support (BLS) level. Includes signs and symptoms of illness and injury, initial treatment, stabilization, and transportation. Focus on: airway management, and patient assessment. Required: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121; pass MTH-060 with a C or better or placement in MTH-065. Prerequisite: AHA CPR Healthcare Provider or equivalent.

EMT-102 EMT Basic Part II
5 credits, Winter/Spring/Summer
Continuation of EMT-101. Focus on: medical and trauma emergencies, EMS operations, and special populations. Includes 16 hours of observational time in an emergency department and with an EMS unit. Prerequisite: Pass EMT-101.

EMT-105 Introduction to Emergency Medical Services
3 credits, Fall/Spring
Introduces the student to EMS. Examines the career path for paramedics. Explores structure and function of EMS systems. Includes roles and responsibilities, operations, medico-legal consideration, stress management, blood borne pathogens, and other Oregon specific content.

EMT-107 EMT Rescue
3 credits, Spring
Covers EMS operational areas including rescue practices, standard and rapid patient extrication, introduction to heavy extrication, control of rescue operations, scene safety, and more. Prerequisite: Pass EMT-101.

EMT-108 Emergency Response Patient Transportation
2 credits, Spring
Covers ambulance operations, laws, maintenance and safety, emergency response driving and route planning. Required credits for the CCC one-year EMT certificate program and for students transferring to two-year AAS-EMT program. Prerequisite: Pass EMT-101.

EMT-109 Emergency Response Communication/Documentation
2 credits, Spring
Covers principles of communication via verbal, written and electronic modes in the provision of EMS. Documentation of the elements of patient assessment, patient care and transport, communication systems, radio types, reports, codes and correct techniques. Required credits for the CCC one-year EMT certificate program and for students transferring to two-year AAS-EMT program. Prerequisite: Pass EMT-101.

ENG

English

ENG-104 Introduction to Literature: Fiction
4 credits, Fall/Summer
An introduction to American and international short stories, with a focus on the fundamental elements of fiction. Also examines the historical, social, and cultural background and significance of fiction. Students engage in literary analysis, use literary terminology, and develop personal and scholarly responses to fiction. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-105 Introduction to Literature: Drama
4 credits, Winter
An introduction to American and international drama, emphasizing reading, appreciation, discussion, and literary analysis. Focuses on defining the genre and elements of drama, encouraging students’ personal reflections and cultural understanding, incorporating relevant literary theories, and practicing the close reading and analysis of dramatic works. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.
ENG-106 Introduction to Literature: Poetry
4 credits, Spring/Summer
Introduction to American and international poetry. Explores the fundamental elements of poetry and examines the historical, social, and cultural significance of various poems. Students engage in literary analysis, use literary terminology, and develop personal and scholarly responses to poetry. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-107 World Literature
4 credits, Fall
Literature of the ancient world: epic, lyric, and dramatic literature with an emphasis on Greek, Roman, Hebrew, Egyptian, and Hindu works. Through class discussion and written work, students practice close reading and literary interpretation, explore the readings’ contemporary relevance, and relate the readings to their own lives and the world. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-108 World Literature
4 credits, Winter
Readings from the Middle Ages through the eighteenth century “Enlightenment” period emphasizing Cervantes, Dante, and Voltaire. Through class discussion and written work, students practice close reading and literary interpretation, explore the readings’ contemporary relevance, and relate the readings to their own lives and the world. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-109 World Literature
4 credits, Spring
Readings from the late eighteenth century “Romantic” period through modern times, ranging from Russia to Nigeria and Colombia. Through class discussion and written work, students practice close reading and literary interpretation, explore the readings’ contemporary relevance, and relate the readings to their own lives and the world. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-121 Mystery Fiction
4 credits, Fall
Mystery novels and short stories by such writers as Poe, Doyle, Christie, Sayers, Chandler, and Grafton. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-130 Leadership in Literature
4 credits, not offered every year
Examines the nature of leadership by analyzing characters who are leaders in major literary works. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-194 Introduction to Film
4 credits, not offered every year
Viewing, discussion, and analysis of films from a variety of eras and cultures. Students will learn to analyze a film beyond its surface meaning, drawing on film aesthetics, technology, history, and theory. The interpretive and critical thinking skills they develop can be applied to a variety of modern media. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-195 American Film
4 credits, not offered every term
The history and theory of American filmmaking from 1895 to the present. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-201 Shakespeare
4 credits, Fall
Selected comedies, histories, tragedies, romances, and poetry are covered. Students focus on reading and discussion, literary interpretation, and relating Shakespeare’s work to their lives and the world. Works from ENG-201 will not be repeated in CCC’s other Shakespeare course, ENG-202. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-202 Shakespeare
4 credits, Winter
Selected comedies, histories, tragedies, romances, and poetry. Students focus on reading and discussion, literary interpretation, and relating Shakespeare’s work to their lives and the world. Works from the ENG-202 will not be repeated in CCC’s other Shakespeare course, ENG-201. Study of significant plays and sonnets, covering a different selection of works than ENG-201. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-204 Survey of English Literature
4 credits, Winter
From its beginnings through early eighteenth century. Representative readings from the Romantic, Victorian and modern periods. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-213 U.S. Latino Literature
4 credits, Spring
Survey of U.S. Latino/a literature of various genres and historical periods. Literary contributions by writers of varied cultural heritage, including Chicano, Cuban-American, Puerto-Rican and more. Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-216 Comics and Literature
4 credits, not offered every term
Examines the intrinsic literary and artistic qualities of the comics, as well as the literature and other art they have inspired. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.
ENG-217 Games and Literature
4 credits, not offered every term
Explores games as important narrative forms with strong ties to the literary, social, and historical times in which they are created. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-218 Arthurian Legends
4 credits, not offered every year
Origins and mystique of Arthurian legend from medieval to modern times. Examines issues of idealism, individualism, and spiritual renewal through discussion of knighthood, chivalry and the Holy Grail quest. Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-225 Creative Nonfiction Literature
4 credits, not offered every year
Discussion and analysis of various types of creative nonfiction such as literary journalism, memoirs, nature or science writing, literary travel writing, and personal essays. Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-230 Documentary & Experimental Filmmaking
4 credits, not offered every term
Introduction to the concepts and fundamentals of documentary and experimental filmmaking. This lecture/studio course will explore traditional and new technological approaches to creating digital documentaries and avant-garde film. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121; pass DMC-104 or previous experience with film studies and digital video.

ENG-250 Greco-Roman Mythology
4 credits, Fall
Analysis of the themes and structures of the myths of the ancient Greek and Roman cultures; study of the influence on the cultures that followed. Insight into the social, psychological, and aesthetic nature of mythology. Introduction to theoretical approaches to myth interpretation. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-251 Celtic Mythology
4 credits, Winter
Analysis of the themes and structures of the myths of the ancient Irish and Welsh cultures. Study of the Celtic legacy. Insight into the social, psychological, and aesthetic nature of mythology. Introduction to theoretical approaches to myth interpretation. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-252 Hindu Mythology
4 credits, not offered every year
Analysis of the themes and structures of the myths of ancient India and their contribution to culture, history, and literature. Insight into the social, psychological, and aesthetic nature of mythology. Introduction to theoretical approaches to myth interpretation. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-253 American Literature
4 credits, Fall
Pre-colonial to nineteenth century. Surveys the development of American fiction, nonfiction, poetry, and drama through the study of the works of both major and lesser-known writers. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-254 American Literature
4 credits, Winter
Mid-nineteenth century to twentieth century. Surveys the development of American fiction, nonfiction, poetry, and drama through the study of the works of both major and lesser-known writers. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-255 American Literature
4 credits, not offered every year
Focus on selected authors and works of modern American fiction, poetry, nonfiction, and drama. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-261 Literature of Science Fiction
4 credits, not offered every year
Introduction to science fiction in literature and film, exploring historical and contemporary themes. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-266 The Literature of War
4 credits, not offered every year
Fiction, poetry, nonfiction, and popular song lyrics dealing with the experience of war. Crane, Remarque, Trumbo, Heller, Vonnegut, Owen, Sassoon, and writers of the Vietnam War will be examined and discussed. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENG-280 English/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. Provides students with on-the-job experience in the field of English studies. Required: Instructor consent & a CWE seminar.

ENG-296 Adaption: Literature into Film
4 credits, not offered every year
Explores the art of transforming literary text into films. Focuses on various literary genres such as the novel, the short story, the play, and the nonfiction event, and analyzes the process of adapting these stories. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ENGR

ENGR-102 Engineering Computation
4 credits, Fall
Introduction to data structures for solving engineering problems. Continues developing skills in the algorithmic method for engineering problem solving. Prerequisite: Pass CS-120 or placement in CS-121. Pass MTH-111 or placement in MTH-112 or 4 years of high school math.

ENGR-111 Introduction to Engineering
3 credits, not offered every term
Introduction to basic ideas and tools of the engineering profession. Rudiments and methods of engineering analysis, design and problem solving culminating in a design project. The class will cover all facets of design, including background research, requirement specification and prioritization, development, prototype construction, testing, and evaluation for future redesigns. Corequisites: MTH-112.
ENGR-112 Engineering Programming
3 credits, not offered every term
Introduction to basic scientific and engineering computing using MATLAB. Rudiments and methods of engineering analysis, design, and problem solving with computational tools. Emphasis on developing proficiency in writing functions and programs. Corequisites: MTH-112.

ENGR-115 Engineering Graphics
3 credits, not offered every year
Mechanical design automation software used to design parts and assemblies, design methods used to build, maintain and modify parts. Covers 2D documentation and isometric views cooperated with ASME standards. Includes real time shaded 3D modeling. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: ENGR-111.

ENGR-211 Statics
4 credits, not offered every term
First term of engineering mechanics sequence. Force analysis in structures and machines under various loading conditions. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-252. Corequisite: PH-211.

ENGR-212 Dynamics
4 credits, not offered every term
Kinematics, kinetics, work-energy, and impulse-momentum relationships of engineering systems. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass ENGR-211 and PH-211.

ENGR-213 Strength of Materials
4 credits, not offered every term
The relation of externally applied loads and their internal effects on deformable bodies; such as columns, shafts, beams, and statically indeterminate structures or systems made up of such members. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass ENGR-211.

ENGR-221 Electrical Circuit Analysis
4 credits, not offered every term
Designed to give the student a thorough understanding of basic electrical circuit theory, this course covers voltage and current relationships and fundamental methods of circuit analysis. Electrical circuit parameters such as resistance, inductance, and capacitance will be examined through theory and laboratory experiments. Prerequisites: Pass MTH-252.

ENGR-222 Electrical Circuit Analysis II
4 credits, not offered every term
Expands upon the techniques of circuit analysis begun in ENGR-221 through theory and laboratory experiments. The course covers the time response of first- and second-order circuits, the steady-state circuit behavior of circuits driven by sinusoidal sources, and the use of Laplace transforms to analyze the transient and steady-state behavior for a number of signal types. Prerequisites: Pass ENGR-221.

ENGR-223 Electrical Circuit Analysis III
4 credits, not offered every term
Final course in the electrical circuits sequence. The main emphasis of the course are frequency response of circuits, the design and analysis of filters, A/C steady state circuits with Laplace transform analysis, three-phase power, and two-port networks. The laboratory portion of the course will consist of one project involving significant design and analysis. Prerequisites: Pass ENGR-222.

ENGR-226 Plane Surveying and Mapping
4 credits, not offered every term
An introduction to the concepts of plane surveying, including the use of tape, level, transit, electronic total station (ETS), and horizontal/vertical control networks. Covers network calculations and adjustments, angles and bearings, and topographic surveying and mapping. Prerequisites: Pass MTH-111.

ENGR-231 Properties of Materials
4 credits, not offered every term
An introduction to materials science, a field that describes the behavior of materials by utilizing principles of chemistry and physics to engineer new materials and predict their resultant properties. The course will focus on describing the microscopic physical and chemical structure of materials and relating that structure to the macroscopic thermal, electrical, and mechanical properties. The course will also cover the connection between atomic/crystal structure and materials processing. Prerequisites: Pass CH-221.

ENL Courses with this prefix may transfer to a four-year institution. Courses are intended for PIE students.

English as a Non-Native Language

ENL-117 Advanced Grammar A
3 credits, not offered every term

ENL-118 Advanced Grammar B
3 credits, not offered every term

ENL-119 Advanced Reading/Writing
6 credits, not offered every term
Advanced students practice reading, writing, and editing skills useful in both academic and workplace contexts. Students generally take this course for more than one term to satisfy all requirements. Required: Instructor consent.
ENL-120 Advanced Communication Skills
3 credits, not offered every term
Develops fluency in speaking and listening in the contexts of school, work, family and community. Prepares students for success in discussions, interviews, conferences, presentations, and academic notetaking. Required: Instructor consent.

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

Energy & Utility Resource Management
ERM-100 Orientation to Energy & Resource Technology
3 credits, Fall
Overview of the energy, utility, and resource industries' career options. Through research, students will discover and report on career options in the energy and utilities resource industries. Prerequisite: Pass ERM-121. Corequisites: ERM-107, ERM-108A and ERM-171. Required: Instructor consent.

ERM-101 Energy & Resource Technology I: Electricity
3 credits, Winter
Examine the history, development and segmentation of the energy industry in the Northwest. Research and report on the effects of regional energy policies and how they affect specific segments of the energy industry. Prerequisite: Pass ERM-100 with a C or better. Corequisite: ERM-102. Required: Instructor consent.

ERM-102 Energy & Resource Technology II: Electricity
3 credits, Winter
Focus on generation sources of electricity, transmission and final delivery to the consumer. Examine basic principles of alternating and direct current as it affects electrical flow. Research and report on strategies/components of the electrical industry. Prerequisite: Pass ERM-100 with a C or better. Corequisite: ERM-101. Required: Instructor consent.

ERM-103 Energy & Resource Technology III: Generation
3 credits, Spring
Examine various methods for generating electricity and power distribution throughout the Northwest. Coal, natural gas, nuclear, hydro, diesel powered plants, and the path to emerging technologies such as wind, solar, geothermal and wave energy resources. Prerequisite: Pass ERM-101 and ERM-102 with a C or better. Required: Instructor consent.

ERM-107 Career Portfolio
3 credits, Fall
Develop and customize a portfolio to record the application of knowledge and skills which may relate to energy and utility resource industries. Portfolio consists of resume, reference letters, work samples, narrative and certifications. Prerequisite: Pass ERM-121 or instructor consent. Corequisites: ERM-100, ERM-108A and ERM-171 or instructor consent.

ERM-108A Career Industry Marketing Strategies
2 credits, Fall
Complete your National Career Readiness Certificate (NCRC) as a job-marketing tool to demonstrate knowledge, skills in core areas that apply to energy and utility resource management. This course includes: computer literacy, math and logic. Explore various career options and pathways, and develop industry contacts. Practice interviewing skills and techniques. Prerequisite: Pass ERM-121. Corequisites: ERM-100, ERM-107, and ERM-171. Required: Instructor consent.

ERM-121 Basic Electricity Fundamentals
1 credit, Summer
Designed to help students develop an understanding of basic electricity and utility systems; from electromagnetism, generation, transmission, distribution and finally to its end use in homes and at work. It is for students with little or no previous knowledge of electricity. It covers basic electricity fundamentals in a fun non-technical way, incorporating group processes, hands-on activities, and problem-solving exercises, videos and slides. Prerequisite: Pass RD-090 with a C or better or placement in RD-115, pass MTH-020 with a C or better or placement in MTH-060, pass WR-090 with a C or better or placement in WR-095. Required: Instructor consent.

ERM-171 Energy Industry Workplace Health Awareness
3 credits, Fall
Discover principles and concepts that govern health related environmental conditions in a workplace setting in the utility industry. Create systems for change specific to health related workplace conditions. Prerequisite: ERM-121. Corequisites: ERM-100, ERM-107, and ERM-108A. Required: Instructor consent.

ERM-172 Energy Industry Safety Development
3 credits, Fall
Discover principles and concepts that govern safe work practices in the utility industry. Focus on safety awareness and development. Required: Valid Oregon Driver's License and satisfactory driving record to pass the CDL permit requirements of ODMV. Prerequisite: Pass ERM-171 with a C or better. Required: Instructor consent.

ERM-173 Energy Industry Performance Development
6 credits, Winter
Discover principles and concepts that govern performance development using safe work practices in the utility industry. Development of knowledge, skills and abilities to promote team efficiency. Prerequisite: Pass ERM-172 with a C or better. Corequisites: ERM-101 and ERM-102. Required: Instructor consent.
ERM-174 Groundworker Training
3 credits, Spring
Prepares the student for basic Groundworker responsibilities. This course provides the training, field competency, and documentation to become qualified to assume duties of a bid Groundman. Prerequisite: Pass ERM-173 with a C or better. Required: Instructor consent.

ERM-175 Initial Pole Climbing
4 credits, Spring
Focuses on safety, proper equipment and various job functions. The students will practice and perform pole top rescue, and test out doing different performances on the pole at four, ten, sixteen, twenty-five, and thirty-five feet. All climbing is done in full fall restraint at all times. Prerequisite: Pass ERM-174 with a C or better. Required: Instructor consent.

ERM-180 Energy & Resource Management/CWE
3 credits, Spring
Cooperative work experience. Emphasis on work-based learning experience in the utility industry. Coordination of instruction and evaluation of student job performance will be provided by college faculty in conjunction with the student’s employer/supervisor. Required: Instructor consent & CWE seminar, or the successful completion of a C or better in ERM-107 and ERM-108A.

ERM-201 Energy Applications I: Renewable Energy Resources
4 credits, Fall
Access and interpret the current and potential applications of renewable energy resources throughout the energy and resource industries. This includes renewable energy impacts on generation, transmission, distribution, transportation, and end-use in buildings (homes, office and manufacturing process). The perspectives covered include energy policy (politics), economics (cost/benefit) and technology (physical potential/limits). Prerequisite: Pass ERM-103 with a C or better. Required: Instructor consent.

ERM-202 Energy Applications II: Leadership
4 credits, Winter
Explore the concepts of leadership and management for energy industry segments of generation, transmission, and distribution operations. Develop an understanding of management and leadership strategies to expand application and resources to deal with the major issues facing energy and resource industries. Prerequisite: Pass ERM-201 with a C or better. Required: Instructor consent.

ERM-203 Energy Applications III: Seminar
4 credits, Spring
Energy seminar: Each student will develop an individual course plan (approved by the instructor) to survey and do original research and interviews, and report on a selected current energy application. The report and verbal presentation is the capstone of knowledge and skills covered by the ERM series (100 through 200 levels) and will be communicated in a written report (peer reviewed), as well as a formal student presentation to a panel of industry and academic experts. Reports and presentations may define internship projects. Prerequisite: Pass ERM-202 with a C or better. Required: Instructor consent.

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

Environmental Safety & Health
ESH-100 Environmental Regulations
3 credits, Fall/Winter/Spring/Summer
An overview of environmental regulations as they pertain to industry, agriculture, schools and the general public. Major points of environmental law, federal and state regulatory statutes and regulations, and the agencies responsible for their enforcement. This course has been developed with the cooperation of DEQ.

ESH-101 Hazardous Waste Management
2 credits, Fall/Winter/Spring/Summer
DEQ authorized class. This class offers ways to reduce, identify, store, and dispose of hazardous waste in Oregon. Certificate available from DEQ.

ESL Courses with this prefix will not transfer to a four-year institution. Courses are intended for ESL students.

English as a Second Language
ESH-001 Planning for Your Future
0 credit, Fall/Winter/Spring/Summer
This course is designed for new students in the ESL program at CCC. Students receive information about their test results, classes offered, departmental and college policies, college services available, campus facilities, student responsibilities, and community resources. Required: Instructor consent.

ESH-010 ESL Tutoring (Literacy)
0 credit, Fall/Winter/Spring/Summer
Adopt a tutor to focus on specific learning needs. Sessions are held in various public places throughout Clackamas County, such as libraries, schools, churches, and the college campuses and outreach sites. Tutors help to set student goals and a plan of learning. Required: Instructor consent.

ESH-012 Assess/Evaluate New Students
0 credit, Fall/Winter/Spring/Summer
New students in the ESL program receive information about classes offered, departmental and college policies, college services available, campus facilities, student responsibilities, and community resources. Students are tested to determine language levels and class placement. Required: Instructor consent.
ESL-014 Introduction to Business English A
0 credit, not offered every term
This course is Part A of a two-part series of classes designed for non-native speakers of English who are considering employment and/or training in a business field. The course teaches students the basic communication skills frequently required in everyday business interactions both in the U.S. and internationally. Required: Instructor consent.

ESL-015 Introduction to Business English B
0 credit, not offered every term
Part B of a two-part series of classes designed for non-native speakers of English who are considering employment and/or training in a business field. The course teaches students the basic communication skills frequently required in everyday business interactions both in the U.S. and internationally. Required: Instructor consent.

ESL-019 Educational Planning for Returning Students
0 credit, Fall/Winter/Spring/Summer
For returning students in the ESL program at CCC. Students meet with their instructors to review progress, revisit goals, register for classes, and learn how to transition to other educational and training opportunities at the college and in other community programs. Required: Instructor consent.

ESL-022 Beginning ESL
0 credit, Fall/Winter/Spring/Summer
Introduces the language necessary to function in day-to-day American society at the beginning level: listening, speaking, reading, and writing are taught in the contexts of work, family, and community. Required: Instructor consent.

ESL-033 Intermediate Conversation
0 credit, Fall/Winter/Spring/Summer
Intermediate-level students study and practice speaking and listening to improve their fluency in English for living and working situations. Required: Instructor consent.

ESL-034 Upper Intermediate Conversation
0 credit, not offered every term
For upper-intermediate non-native speakers of English who want to study and practice speaking and listening to improve their fluency in English for living and working situations. Emphasis will be on developing conversational skills as needed for success in meeting personal, educational, family, and workplace goals. Required: Instructor consent.

ESL-035 Advanced Communication Skills
0 credit, not offered every term
Designed to help advanced non-native speakers of English gain fluency in speaking and listening in the contexts of school, work, family and community. Prepares students for success in discussions, interviews, conferences, presentations, and academic note taking. Required: Instructor consent.

ESL-040 Beginning Grammar
0 credit, Fall/Winter/Spring/Summer
Presentation and practice present simple tense of the verb “to be,” nouns, descriptive/possessive adjectives, prepositions of place and time, and simple sentence structures in written and spoken English. Required: Instructor consent.

ESL-041 Upper Beginning Grammar
0 credit, Fall/Winter/Spring/Summer
Class will present and practice the present simple, past simple, and present continuous tenses, adverbs of frequency, articles, and nouns in written and spoken English. Required: Instructor consent.

ESL-042 Intermediate Grammar A
0 credit, not offered every term
Part A of a two-part series. Present and practice the formation and use of the simple present and present progressive with a focus on non-action verbs and extended time, past simple, past progressive, used to, the future, and wh-questions in written and spoken English. Required: Instructor consent.

ESL-043 Intermediate Grammar B
0 credit, not offered every term
Part B of a two-part series. Present and practice present perfect with time expressions and adverbs of frequency, modals of ability, permission and advice, and comparative and superlative adjectives in written and spoken English. Required: Instructor consent.

ESL-044 Upper Intermediate Grammar A
0 credit, not offered every term
Part A of a two-part series of classes designed to help upper-intermediate ESL students gain knowledge and proficiency in the use of verb forms that frequently occur together, gerunds, infinitives, and causative verbs. Required: Instructor consent.

ESL-045 Upper Intermediate Grammar B
0 credit, not offered every term
Part B of a two-part series. Present and practice adverb clauses, discourse connectors, reported speech, and noun clauses in written and spoken English. Required: Instructor consent.

ESL-046 Advanced Grammar A
0 credit, not offered every term

ESL-047 Advanced Grammar B
0 credit, not offered every term

ESL-049 Beginning Reading and Writing
0 credit, Fall/Winter/Spring/Summer
Designed to teach beginning-level students who have limited knowledge of written English. Students will practice alphabet recognition, read and write short sentences, study new vocabulary, read short paragraphs, and gain reading and scanning skills to use in everyday life and in the workplace. Required: Instructor consent.
ESL-050 Upper Beginning Reading and Writing
0 credit, Fall/Winter/Spring/Summer
For upper-beginning level ESL students who read and write at the sentence level. Students read short texts in order to improve reading skills, write a variety of sentences and put related sentences in paragraph form. Required: Instructor consent.

ESL-051 Upper Beginning Reading
0 credit, not offered every term
For upper-beginning level ESL students who read at the sentence level. Students read short texts in order to improve reading skills. Required: Instructor consent.

ESL-052 Upper Beginning Writing
0 credit, not offered every term
Designed for upper-beginning level ESL students who write at the sentence level. Students will write a variety of sentences and put related sentences in paragraph form. Required: Instructor consent.

ESL-053 Intermediate Reading/Writing
0 credit, Fall/Winter/Spring/Summer
Designed for the intermediate-level ESL student who is ready to begin writing at the paragraph level. The major purpose of the course is to improve the student’s reading and writing skills needed for more advanced ESL and college courses, in the workplace, and in everyday life. Introduction to multiple paragraph essays. Required: Instructor consent.

ESL-054 Upper Intermediate Reading/Writing
0 credit, Fall/Winter/Spring/Summer
Upper-intermediate students will practice reading and writing skills needed to succeed in college, the workplace, and everyday life. Introduction to multiple paragraph essays. Required: Instructor consent.

ESL-055 Advanced Reading/Writing
0 credit, not offered every term
Advanced students practice reading, writing, and editing skills useful in both academic and workplace contexts. Students generally take this course for more than one term in order to satisfy all requirements. Required: Instructor consent.

ESL-056 Intermediate Reading
0 credit, not offered every term
For intermediate-level ESL students who read at the paragraph level. Introduction to strategies for improving reading skills as needed for more advanced ESL and college courses, in the workplace, and in everyday life. Required: Instructor consent.

ESL-057 Intermediate Writing
0 credit, not offered every term
For intermediate-level ESL students who are ready to begin writing at the paragraph level. Strategies for improving writing skills as needed for more advanced ESL and college courses, in the workplace, and in everyday life. Required: Instructor consent.

ESL-058 Upper Intermediate Reading
0 credit, not offered every term
For upper-intermediate level ESL students who read beyond the paragraph level. Development of the reading skills needed to succeed in college and in everyday life. Required: Instructor consent.

ESL-059 Upper Intermediate Writing
0 credit, not offered every term
For the upper-intermediate level ESL student to develop the writing skills needed to succeed in college and in everyday life. Introduction to multiple paragraph essays. Required: Instructor consent.

ESL-060 Pronunciation A
0 credit, not offered every term
For intermediate or higher-level ESL students who want to sound more natural when speaking English. Focuses on increasing awareness of the sounds of American English, improving intelligibility, and producing speech more fluently. Required: Instructor consent.

ESL-061 Pronunciation B
0 credit, not offered every term
For ESL students at the intermediate-level or higher who want to sound more natural when speaking English. Activities will focus on increasing student awareness of the sounds of American English, improving intelligibility, and producing speech more fluently. Required: Instructor consent.

ESL-063 Idioms & Conversation A
0 credit, not offered every term
Part A of a two-part series of classes that introduces common American idioms while practicing conversation skills at the upper-intermediate level. Required: Instructor consent.

ESL-064 Idioms & Conversation B
0 credit, not offered every term
Part B of a two-part series of classes that introduces common American idioms while practicing conversation skills at the upper-intermediate level. Required: Instructor consent.

ESL-065 Video and Conversation
0 credit, not offered every year
Intensifies intermediate/advanced ESL language skills in listening/speaking. Students view Crossroads Café video series, complete workbook exercises, practice listening for specific information, participate in pair, small group, and whole class discussions and activities. Required: Instructor consent.

ESL-070 Computer Lab
0 credit, Fall/Winter/Spring/Summer
Provides opportunities to improve English language skills by using language learning software and Internet websites. Required: Instructor consent.

ESL-071 ESL Skills Lab
0 credit, Fall/Winter/Spring/Summer
Students improve their language skills using language learning software on the computer. Required: Instructor consent.

ESL-073 Writing Skills
0 credit, not offered every year
For ESL students who want to improve writing skills for everyday life, the workplace and college courses. Students work individually with instructor guidance. Required: Instructor consent.

ESL-074 Differentiated Writing Instruction
0 credit, not offered every year
Designed for ESL students who want to improve their writing skills for everyday life, the workplace and college courses. Students work individually with instructor guidance. Required: Instructor consent.
ESL-075 ESL Study Skills
0 credit, not offered every term
Students work independently to improve their English language skills as they complete assignments or projects from other classes. Required: Instructor consent.

ESL-076 Multi-Level ESL
0 credit, not offered every term
Introduces the language necessary to function in day-to-day American society at multiple levels. Speaking, listening, grammar, reading, and writing are taught in the contexts of work, family, and community. Instruction will be tailored to individual students' skill levels in the different skill areas addressed. Required: Instructor consent.

ESL-082 Spelling
0 credit, not offered every term
Presents and provides opportunities to practice English spelling patterns and rules. Individualized instruction to address spelling challenges. Required: Instructor consent.

ESL-083 Vocabulary Building A
0 credit, not offered every year
Part A of a two-part series of classes in which upper-intermediate and advanced level students will develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and from the Academic Word List, and will develop their vocabulary acquisition skills. Required: Instructor consent.

ESL-084 Vocabulary Building B
0 credit, not offered every year
Part B of a two-part series of classes in which upper-intermediate and advanced level students will develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and from the Academic Word List, and will develop their vocabulary acquisition skills. Required: Instructor consent.

ESL-085 Editing A
0 credit, not offered every term
Upper-intermediate and higher-level ESL students will improve their writing through editing. Required: Instructor consent.

ESL-086 Editing B
0 credit, not offered every term
Upper-intermediate and higher-level ESL students will improve their writing through editing. Required: Instructor consent.

ESL-087 Editing for Better Writing
0 credit, Fall/Winter/Spring/Summer
Upper-intermediate and higher-level ESL students will improve their writing through editing. They will also engage in extended reading which will provide a context for writing. Required: Instructor consent.

ESR
Environmental Science

ESR-171 Environmental Science
4 credits, Fall
A lab science course introducing environmental science issues, the scientific method, systems and feedback, biogeochemical cycles, human population growth, communities and ecosystems, productivity and energy flow, world food supply, environmental effects of agriculture, and endangered species. Recommended: Pass MTH-060 with a C or better or placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ESR-172 Environmental Science
4 credits, Winter
A lab science course introducing the planning of parks preserves, the scientific method, environmental toxicology, energy principles, fossil fuel recovery and use, renewable energy sources, nuclear energy, water management, water pollution, climate change and air pollution. Recommended: Pass MTH-060 with a C or better or placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

ESR-173 Environmental Science
4 credits, Spring
A lab science course introducing indoor air pollution, the scientific method, ozone depletion, minerals and the environment, environmental economics, urban environments, waste management, biological diversity, biogeography and exotic species, ecological succession and restoration, and environmental sustainability. Recommended: Pass MTH-060 with a C or better or placement in MTH-065; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

EST
Employment Skills Training

EST-180 Employment Skills Internship
1-12 credits, Fall/Winter/Spring/Summer
Develop entry level skills in a specific occupation and practice the career management skills necessary to obtain, sustain, and advance employment. A comprehensive employment plan is developed with a focus on a career path.

FN
Food & Nutrition

FN-110 Personal Nutrition
3 credits, Fall/Winter/Spring/Summer
How nutrition affects health and fitness for the individual and the family. Analysis of present diet and methods to improve food preparation and habits. Basic nutrition course for student with little or no science background.

FN-225 Nutrition
4 credits, Fall/Winter/Spring/Summer
The role of nutrients in the development and maintenance of a healthy body. Students utilize computer aided analysis of own diet for nutritional adequacy. Examines current nutrition controversies. Strong background in life sciences recommended.
FR

French

FR-101 First-Year French I
4 credits, Fall
The first year of academic French is designed to give the student a fundamental knowledge of pronunciation and intonation, structure and syntax as well as comprehension skills sufficient for basic communicative proficiency in the language. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

FR-102 First-Year French II
4 credits, Winter
The first year of academic French is designed to give the student a fundamental knowledge of pronunciation and intonation, structure and syntax as well as comprehension skills sufficient for basic communicative proficiency in the language. Prerequisite: Pass FR-101 or instructor consent.

FR-103 First-Year French III
4 credits, Spring
The first year of academic French is designed to give the student a fundamental knowledge of pronunciation and intonation, structure and syntax as well as comprehension skills sufficient for basic communicative proficiency in the language. Prerequisite: Pass FR-102 or instructor consent.

FR-201 Second-Year French I
4 credits, Fall
The second year of academic French expands on first-year French in the review of grammar and in the cultural reading material. Communication skills are emphasized stressing oral proficiency. Prerequisite: Pass FR-103 or instructor consent.

FR-202 Second-Year French II
4 credits, Winter
The second year of academic French expands on first-year French in the review of grammar and in the cultural reading material. Communication skills are emphasized stressing oral proficiency. Prerequisite: Pass FR-201 or instructor consent.

FR-203 Second-Year French III
4 credits, Spring
The second year of academic French expands on first-year French in the review of grammar and in the cultural reading material. Communication skills are emphasized stressing oral proficiency. Prerequisite: Pass FR-202 or instructor consent.

FRP

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

Fire Science (Wildland)

FRP-101 Basic Forest Management
3 credits, not offered every term
A basic introduction to Oregon forest land management functions, tools and processes related to forest stewardship. Students will gain knowledge of current forest management activities and practices, as well as current forest policy and harvest laws.

FRP-102 Basic Forest Management Lab
1 credit, not offered every term
Provides through lab exercises in a forest setting experience in using forest management field equipment discussed in FRP-101; includes use of diameter tape, loggers tape, compass, clinometer, increment borer and wedge prism to measure tree height, diameter, tree age, diameter increment and basal area; and use of fixed plot and variable plot forest sampling methods to gather data necessary to calculate stocking, volume and growth. Corequisite: FRP-101.

FRP-107 Wildland Fire Career Portfolio
3 credits, not offered every term
Create a job-marketing tool that integrates knowledge and skills related to the wildland fire industry. Portfolio consists of resume, reference letters, work samples and other content to be updated according to need and opportunity. Meets the cooperative work experience seminar requirement.
FRP-110 Basic Wildland Fire Investigation (FI-110)
1 credit, not offered every term
NWCG FI-110 certified. Wildland Fire Observations and Origin Scene Protection for First Responders. Introductory course for personnel first arriving at a wildland fire scene on the basics of wildland fire cause determination.

FRP-130 Introduction to Wildland Firefighting (S-130/S-190)
3 credits, Fall/Winter/Spring
NWCG S-130 and S-190 certified. Introduces students to wildland fire behavior and the skills necessary to fight wildland fires under close supervision. No firefighting experience required.

FRP-131 Advanced Firefighter Training (S-131)
1 credit, not offered every term
NWCG S-131 and S-133 certified. For firefighters who wish to become qualified in the first level of supervision, Advanced Firefighter/Squad Boss, being a first responder to initial fire attack. As a portion of this course, S-133 (Look Up, Look Down, Look All Around) material is covered. Prerequisite: Pass FRP-130 (S-130).

FRP-180 Wildland Fire/CWE
Fall/Winter/Spring/Summer
3 or 6 credits
Work-based learning experience in a wildland firefighting capacity meeting requirements as set forth in the wildland firefighting task book. Prerequisite: Pass FRP-130. Required: Current enrollment in or successful completion of FRP-107; Instructor consent.

FRP-200 Basic Incident Command System (I-200)
1 credit, not offered every term
NWCG I-200 certified. Introduces the student to principles associated with the Incident Command System (ICS) covering organization, facilities, resource terminology and common responsibilities associated with incident assignments.

FRP-201 Advanced Forest Management
3 credits, not offered every term
Discuss and explore forest management concepts and principles through classroom lecture and field trips including forest policy development and the current federal and state laws; forest ecosystem management principles and activities; wildlife, watershed and recreation values and conflicts; and compare forest management on federal, state and private lands. Prerequisites: FRP-101, FRP-102.

FRP-205 Forest Management Assessments & Inventories
3 credits, not offered every term
Provide forest technicians, seasonal wildland firefighters and other natural resource seasonal employees to, understanding of, and the ability to conduct various forest management and recreation management assessments and inventories that are routinely done to gather data for making decisions; providing training in these areas that would broaden employment opportunities for seasonal employees during periods of low fire activity or during the off season periods of the year. Prerequisites: FRP-101, FRP-102. Recommended: FRP-201.

FRP-211 Portable Pumps and Water Use (S-211)
1 credit, not offered every term
NWCG S-211 certified. Practical use and maintenance of portable pumps and accessories used in wildland fire suppression.

FRP-215 Fire Operations in the Urban Interface (S-215)
3 credits, not offered every term
NWCG S-215 certified. Meets the training needs for initial attack incident commanders and company officers confronting wildland fires that threaten life, property and improvements.

FRP-216 Driving for the Fire Service (S-216)
2 credits, not offered every term
NWCG S-216 certified. Knowledge and skills required of drivers to safely and efficiently operate fire vehicles in the fire environment.

FRP-217 Interagency Helicopter Training (S-271)
3 credits, not offered every term
NWCG S-271 certified. Provides basic knowledge and skills required by individuals working with helicopters relative to fire and non-fire: safety, protective equipment, load calculations, landing areas, fueling, Helibase and Helispot operations.

FRP-220 Initial Attack Incident Commander (S-200)
1 credit, not offered every term
NWCG S-200 certified (ITC4). Provides individuals in charge of the initial attack of small, non-complex fires the training needed for readiness, mobilization, size-up the fire; and the administrative requirements that must be completed by the incident commander.

FRP-230 Crew Boss (Single Resource) (S-230)
2 credits, not offered every term
NWCG S-230 certified. Meets the training needs of a single resource boss on a wildland fire incident. Prerequisite: Qualify as FFT1.

FRP-231 Engine Boss (Single Resource) (S-231)
1 credit, not offered every term
NWCG S-231 certified. Develop proficiency in the performance of all duties associated with the single resource engine boss. Prerequisites: Pass FRP-230 (S-230).
Course Descriptions

FRP-239 Division/Group Supervisor (S-339)
2 credits, not offered every term
NWCG S-339 certified. Skills and knowledge required to perform the tasks of a Division or Group Supervisor as identified in the position task book, PMS 311-09. Prerequisite: Pass FRP-259 (S-330) or be a task force/strike team leader.

FRP-243 Survivor I: Maps, Compass, GPS 2 credits, Fall/Winter/Spring
Use maps, compass, grid locations, land descriptions, topography, distance, directions, and Global Positioning Systems (GPS).

FRP-244 Survivor II: Wilderness 2 credits, Fall/Winter/Spring
Be prepared to survive in the wilderness; the psychology of surviving and what to do when things go wrong. The USAF Search & Rescue Survival Manual is the text.

FRP-245 Survivor III: Weather of the NW 2 credits, Fall/Winter/Spring
Designed for the wildland firefighter, mariner, hiker, hunter and others who need to know the basics of weather forecasting.

FRP-246 Survivor IV: Wilderness First Aid 2 credits, not offered every term
Covers back country first aid and evacuation techniques in a wilderness setting.

FRP-247 Survivor V: Dangerous Animals 2 credits, not offered every term
Focuses on Northwest animals’ and insects’ habits, how to prevent and avoid conflict with them and what to do if you’re attacked. First-hand accounts, stories, CDC statistics and recommendations will be included.

FRP-248 Survivor VI: Introduction to Search & Rescue 2 credits, not offered every term
Familiarize students with all aspects of Search and Rescue at the beginning level including search philosophy, tactics, operations, and behavior of the lost person.

FRP-249 Leadership for Firefighters (L-280) 2 credits, not offered every term
NWCG L-280 certified. Develop an awareness of the human factors on the fire line, self-assess skills and abilities, and practice problem solving events in small teams. Prerequisite: Pass FRP-130 (S-130).

FRP-259 Task Force/Strike Team Leader (S-330) 2 credits, not offered every term
NWCG S-330 certified. Learn to recognize, plan and implement appropriate tactics in various incident situations with various resources and identify hazards and risks and mitigate them. Prerequisite: Pass FRP-230 (S-230).

FRP-260 Interagency Incident Management (S-260) 1 credit, not offered every term
NWCG S-260 certified. Provides the prerequisite knowledge and skills to perform the tasks of the positions in the Incident Command System (ICS) for which NWCG S-260 is required. Prerequisite: FF1 status.

FRP-270 Basic Air Operations (S-270) 1 credit, not offered every term
NWCG S-270 certified. A survey of the use of aircraft in fire suppression and how to conduct yourself in and around aircraft.

FRP-280 Wildland Fire/Advanced CWE 3 or 6 credits
Fall/Winter/Spring/Summer
Work-based learning experience in a wildland firefighting capacity meeting requirements as set forth in the wildland firefighting task book. Prerequisites: Pass FRP-180 and FRP-131. Required: Instructor consent.

FRP-290 Intermediate Wildland Fire Behavior (S-290) 3 credits, not offered every term
NWCG S-290 certified. Study of weather and environmental factors and how these factors affect wildland fires. Prerequisite: Pass FRP-130 (S-130/S-190).

FRP-294 Intermediate Incident Command System (I-300) 2 credits, not offered every term
NWCG I-300 certified. This course provides description and detail of the Incident Command System (ICS) organization in supervisory roles on expanding or Type 3 incidents. NIMS compliant.

FRP-295 Advanced ICS: ICS for Command and General Staff & Complex Incidents (I-400) 2 credits, not offered every term
NWCG I-400 certified. Directs the student towards an operational understanding of large single-agency and complex multi-agency/multi-jurisdictional responses. Prerequisite: Pass FRP-294 (I-300).

FRP-296 Introduction to Wildland Fire Behavior Calculations (S-390) 3 credits, not offered every term

G

Geology

G-101 General Geology 4 credits, Fall
For non-science majors. A lab course introducing geologic principles and concepts, Earth structure, igneous, sedimentary, and metamorphic rock environments; volcanic activity, and landforms. Introduction to minerals, ores, and basic types of rocks. Recommended: Pass RD-090 or placement in RD-115.

G-102 General Geology 4 credits, Winter
For non-science majors. An introductory lab course that explores the Earth’s systems and surface features. Systems/processes explored include rivers, mass wasting, glaciers, groundwater, deserts and beaches. Labs focus on various map types, using maps to understand geologic features and local geology. Recommended: Pass RD-090 or placement in RD-115.
G-103 General Geology  
4 credits, Spring  
For non-science majors. A lab course that examines the geological development of the North American continent through topics such as geologic time, plate tectonics, mountain building earthquakes/faults, and fossils. Examines important events in each geologic era and includes fossil ID, compass use, field techniques and GPS. Recommended: Pass RD-090 or placement in RD-115.

G-145 Geology of Pacific Northwest  
4 credits, not offered every term  
A lab course that explores the scenic geology of Northwest landscapes, historic development and current problems in environmental geology. Introduction to rock types, geologic processes, and hazards of the Northwest from the Blue Mountains to the coast. Required: Two Saturday field trips.

G-201 General Geology  
4 credits, Fall  
For science majors. A lab course introducing geologic principles and concepts, weathering, soils, Earth structure, igneous, sedimentary, metamorphic rocks, volcanic activity, and landforms. Introduction to environmental geology. Recommended: Pass RD-090 or placement in RD-115; pass MTH-065 or placement in MTH-095.

G-202 General Geology  
4 credits, Winter  
For science majors. A lab course that explores surface features of the Earth and the systems that form those features. Systems/processes explored include beaches, rivers, mass wasting, glaciers, groundwater, deserts and beaches. Topographic/geologic maps are used to understand geologic features and local geology. Recommended: Pass RD-090 or placement in RD-115; pass MTH-065 or placement in MTH-095.

G-203 General Geology  
4 credits, Spring  
For science majors. A lab course that examines the geological development of the North American continent through topics such as geologic time, plate tectonics, mountain building earthquakes/faults, and fossils. Examines important events in each geologic era and includes fossil ID, compass use, field techniques and GPS. Recommended: Pass RD-090 or placement in RD-115; pass MTH-065 or placement in MTH-095.

G-280 Geology/CWE  
2-6 credits  
Fall/Winter/Spring/Summer  
Cooperative work experience. Provides students with on-the-job work experience in the field of geology. Required: Instructor consent & a CWE seminar.

GED  
Courses with this prefix will not transfer to a four-year institution.

General Educational Development

GED-011 GED En Español  
0 credit, Fall/Winter/Spring/Summer  
Basic academic skill-development instruction offered in Spanish. Diagnostic tests determine individual academic needs. Open-entry, open-exit class offered at Campus Learning Center. Required: Instructor consent.

GED-015 GED Preparation  
0 credit, Fall/Winter/Spring/Summer  
Basic academic skill development. Diagnostic tests determine individual academic needs. Students who pass General Educational Development (GED) tests receive high school equivalency certificates. Open-entry, open-exit classes. Required: Instructor consent.

GED-049 Latino GED & Life Skills  
0 credit, Fall/Winter/Spring/Summer  
Offered in Spanish. Basic academic skill development with emphasis on requirements to take the GED test to obtain a high school equivalency certificate. Also focuses on basic life skills, personal and career goals and interests. Required: Instructor consent.

GEO  
Geography

GEO-100 Introduction to Physical Geography  
4 credits, not offered every term  
Analyzes the physical elements of the Earth's surface and atmosphere. Focuses on natural processes that create physical diversity on the Earth including weather and climate, biosphere, soils and landforms. Recommended: Pass RD-090 or placement in RD-115.

GEO-110 Cultural & Human Geography  
4 credits, not offered every term  
Introduces geographical perspectives on human population, agriculture, political pattern, language, religion, folk culture, popular culture, ethnic culture, urban development, industry, and transportation as these play out on the landscapes of the world. Recommended: Pass RD-090 or placement in RD-115.

GEO-121 Regional Geography of the Developing World  
4 credits, not offered every term  
Provides students with the fundamental knowledge of the cultural and physical geography of developing world regions including Middle America, South America, SW Asia & North Africa, Sub-Saharan Africa, South Asia, Southeast Asia, East Asia and the Pacific world. Recommended: Pass RD-090 or placement in RD-115.

GEO-122 Regional Geography of the Developed World  
4 credits, not offered every term  
Provides students with the fundamental knowledge of the cultural and physical geography of developing world regions including Anglo-America; Europe; Russia; East Asia: Japan, Taiwan, South Korea; Australia and New Zealand. Recommended: Pass RD-090 or placement in RD-115.
GEO-130 Introduction to Environmental Geography
4 credits, not offered every term
Explores contemporary global environmental problems such as: overpopulation, over consumption, ozone layer depletion, pollution, acid rain, deforestation, desertification, and waste problems. Examines alternative sources of energy to fossil fuel and sustainable development strategies. Recommended: Pass RD-090 or placement in RD-115.

GEO-208 Geography of the U.S. & Canada
4 credits, not offered every year
Provides students with the fundamental geographical knowledge of the United States and Canada and their paths of development. Presents the spatial arrangement of culture, economics, politics, and the natural environment. Recommended: Pass RD-090 or placement in RD-115.

GEO-230 World Regions & Landscapes
4 credits, not offered every term
Provides students with the fundamental geographical knowledge of world countries and their paths towards development. Presents the similarities and differences in the spatial pattern of culture, economics, politics, and the natural environment of the world's regions. Recommended: Pass RD-090 or placement in RD-115.

GEO-280 Geography/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. Provides students with on-the-job work experience in the field of geography. Required: Instructor consent & a CWE seminar.

GER

German

GER-101 First-Year German I
4 credits, Fall
Introduces the sound system and basic structural patterns of German. Develops the skills of listening comprehension, speaking, reading, and writing. Teaches recognition of cultural similarities and differences. First of a three-term 1st year sequence. Recommended: Pass RD-090 or placement in RD-115, pass WR-095 or placement in WR-121.

GER-102 First-Year German II
4 credits, Winter
Introduces the sound system and basic structural patterns of German. Develops the skills of listening comprehension, speaking, reading, and writing. Teaches recognition of cultural similarities and differences. Second of a three-term 1st year sequence. Prerequisite: Pass GER-101 or instructor consent.

GER-103 First-Year German III
4 credits, Spring
Introduces the sound system and basic structural patterns of German. Develops the skills of listening comprehension, speaking, reading, and writing. Teaches recognition of cultural similarities and differences. Third of a three-term 1st year sequence. Prerequisite: Pass GER-102 or instructor consent.

GER-201 Second-Year German I
4 credits, Fall
Provides opportunities to review and expand language skills to the point of intermediate proficiency through reading, writing, hearing and talking about contemporary issues in US and German-speaking countries. First of a three-term 2nd year course. Prerequisite: Pass GER-103 or instructor consent.

GER-202 Second-Year German II
4 credits, Winter
Provides opportunities to review and expand language skills to the point of intermediate proficiency through reading, writing, hearing and talking about contemporary issues in US and German-speaking countries. Second of a three-term 2nd year course. Prerequisite: Pass GER-201 or instructor consent.

GER-203 Second-Year German III
4 credits, Spring
Provides opportunities to review and expand language skills to the point of intermediate proficiency through reading, writing, hearing and talking about contemporary issues in US and German-speaking countries. Third of a three-term 2nd year course. Prerequisite: Pass GER-202 or instructor consent.

GER-211 Intermediate German Conversation
3 credits, not offered every year
Development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary German-language media, presentations, and interviews of classmates. Major topics and level of conversational difficulty will parallel GER-201. Prerequisite: Pass GER-103 with a C or better or instructor consent.

GER-212 Intermediate German Conversation
3 credits, not offered every year
Development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary German-language media, presentations, and interviews of classmates. Major topics and level of conversational difficulty will parallel GER-202. Prerequisite: Pass GER-103 with a C or better or instructor consent.

GER-213 Intermediate German Conversation
3 credits, not offered every year
Development of speaking and listening proficiency through creative activities such as discussions of excerpts from contemporary German-language media, presentations, and interviews of classmates. Major topics and level of conversational difficulty will parallel GER-203. Prerequisite: Pass GER-103 with a C or better or instructor consent.
GIS
Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

GIS-201 Introduction to Geographic Information System
3 credits, Fall
Provides key GIS concepts, methodologies, and techniques. Emphasis is on developing an understanding of GIS applications, technical GIS concepts, terminology, methodology and problem solving techniques.

GIS-232 Data Collection & Application
3 credits, Spring
Introduction to data collection techniques using global positioning systems, PDAs, and related software. Emphasis on different ways to create data through existing surveys, compilation of data from many sources and merging data from differing sources, etc. Prerequisite: GIS-201.

GIS-236 Visual Basic Programming for GIS
1 credit, Fall
An introduction to Object Oriented Programming and Visual Basic for Application (VBA) programming for ArcGIS. Basics of VBA and ArcObjects are explained so students can create VBA macros to customize the ArcGIS environment. Prerequisite: MFG-109 or equivalent computer competency.

GIS-237 Advanced Visual Basic Programming for GIS
1 credit, Winter
Advanced training in Object Oriented Programming (OOP) and Visual Basic for Applications (VBA). Focus on ArcObjects and how to use object model diagrams to find out what individual objects do. Program objects to execute specific GIS tasks in the ArcGIS environment. Prerequisite: GIS-236.

GIS-255 Introduction to ArcGIS I
1 credit, not offered every term
Covers fundamental GIS concepts as well as how to query a GIS database, manipulate tabular data, edit spatial and attribute data clearly and efficiently using maps and charts.

GIS-280 GIS/CWE
2-6V credits
Fall/Winter/Spring/Summer
Cooperative Work Experience (co-op) is a process of education that integrates a student’s classroom work with experience obtained through a cooperating employer. Required: Instructor consent and a CWE seminar.

GIS-281 ArcGIS I
3 credits, not offered every term
Introduces the essential skills needed to navigate and operate ArcGIS at a basic level. Includes how to utilize GIS concepts, methods and techniques in conjunction with problem solving techniques to accomplish assigned real world examples. Prerequisite: GIS-201.

GIS-282 ArcGIS II
3 credits, Spring
Introduction to the object-oriented data model. Working with geodatabases, datasets and feature classes. Additional topics include: establishing topological relationships, versioning, and analysis of geometric networks. Advanced surface and cell-based modeling will also be covered. Prerequisite: GIS-281.

GIS-286 Remote Sensing
3 credits, Winter
Covers the overview of data sources, methodology for remotely sensed data, application of data, and transformation of remotely sensed data into GRID. Prerequisite: GIS-201.

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

GRN-181 Issues In Aging
3 credits, Fall
Provides an introduction to gerontology including the history of aging and current issues. Covers: myths, stereotypes, economic and political aspects, demographics, and service availability for aging populations. Explores careers within the field.

GRN-182 Aging & the Body
3 credits, Winter
Focuses on how aging affects physical health and well-being: impact on body systems, illness, disability, longevity research, wellness and health promotion. For students interested in working with the elderly and those in the field.

GRN-183 Death & Dying
3 credits, Spring
Introduces effective interaction with those experiencing a death or grief process. Includes: historical and cross cultural perspectives, funeral and death rites, grief across the lifespan, hospice and palliative care, ethical considerations and physician-assisted suicide.

GRN-184 Aging & the Individual
3 credits, Winter
Explores the impact of aging on the individual as well as family members, caregivers, and professionals. Topics include: dementia, cognitive issues, stress, coping, life transitions, intelligence, wisdom and creativity.

GRN-280 Gerontology/CWE
2-6 credits, Fall/Winter/Spring
Work-based experience to acquaint gerontology students with the roles and related activities of organizations serving the elderly. This course provides an opportunity to apply theories and techniques learned in the classroom. Required: Instructor consent; current enrollment in or successful completion of HS-170. Corequisite: CWE-281.
**GS**

**General Science**

See also Arts and Sciences (ASC).

**GS-104 Earth System Science**
1-6 credits, not offered every term
Covers various topics supporting student success and retention. May be repeated for credit.

**GS-105 Earth System Science**
4 credits, Fall
A lab course examining the physics and exploration methods that help us understand our universe. Topics include plate tectonics, the earth's structure, earthquakes/hazards, mineral chemistry, igneous rocks, volcanoes/hazards. Recommended: Pass MTH-065 or placement in MTH-095.

**GS-106 Earth System Science**
4 credits, Winter
A lab course examining the chemistry and geology of scientific dating techniques, sedimentary rocks/surfaces, processes, fossils, energy resources and the physics and chemistry of energy resources and mass wasting. Recommended: Pass MTH-065 or placement in MTH-095.

**GS-107 Astronomy**
4 credits, Fall/Winter
A lab course discussing the physics of the hydrosphere and atmosphere. Includes atmospheric processes, the carbon cycle, desert formation and climate change. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121; pass MTH-095 with a C or better, or placement in MTH-105 or MTH-111.

**HD**

**Human Development & Career Planning**

**HD-100 College Survival**
1-6 credits, not offered every term
Covers various topics supporting student success and retention. May be repeated for credit.

**HD-101 Career Planning**
1 credit, not offered every term
Includes career exploration, planning and decision making, job search and interviewing, and career assessment and awareness. Students complete 30-180 hours per term of volunteer work and participate in seminars. Required: Instructor consent.

**HD-102 Service Learning Experience**
1-6 credits, Fall/Winter/Spring
Provides students with a service learning experience in a community setting. Students complete 30-180 hours per term of volunteer work and participate in seminars. Required: Instructor consent.

**HD-120 College Success**
1 credit, Fall/Winter/Spring/Summer
Provides strategies for creating college success including self-awareness, personal responsibility, understanding self-management, increasing motivation, meaningful goal setting, effective study habits, use of on- and off-campus resources.

**HD-121 College Success Expanded**
3 credits, Fall/Winter/Spring
Provides advanced strategies for creating college success including self-awareness, understanding motivation, employing interdependence, taking personal responsibility, learning style, goal setting, lifelong learning, emotional intelligence, critical thinking, time management, effective study skills/habits/planning, and the use of on- and off-campus resources.

**HD-140 Career Exploration**
3 credits, Fall/Winter/Spring
Students use information about themselves (values, interests, personality and skills) and information about the world of work (career and industries) to explore and make long term career decisions.

**HD-141 Career Advancement**
1-3 credits, not offered every term
Students gather and use information about their current skills, employer, and industry to create career advancement opportunities, identify strategies that increase employment stability, and examine issues that impact successful career pathways.

**HD-144 Assertive Communication**
1 credit, not offered every term
Provides basic communication skills students can use to state or declare their rights in a positive fashion to obtain desired results in career, social, and personal relations.

**HD-145 Stress Management**
1 credit, not offered every term
Identifies specific personal stressors and focus on developing skills that enable students to deal more effectively with stress.

**HD-146 Values Clarification**
1 credit, not offered every term
Helps students examine beliefs, attitudes, and values behind decisions and actions. The student will examine whether behavior matches stated beliefs, evaluate the consequences of choices, and focus on clarifying a personal value system.

**HD-147 Decision Making**
1 credit, Fall/Winter/Spring/Summer
Develop and improve your process for making satisfying choices. The basics of decision making and processes for making personal, social, and work choices are included. Use this class for your current decision needs.

**HD-153 Managing Conflict in Your Life**
1 credit, not offered every term
Introduction to managing conflict in a positive way. Examine personal beliefs about conflict and become more effective in solving problems.

**HD-154 Building Self-Confidence**
1 credit, not offered every term
This course is designed to address the elements forming and impacting self-confidence, disarming your inner critic, including dealing with fear, self-esteem, personal power, and establishing your center.

**HD-156 Creative Goal Setting**
1 credit, not offered every term
Using a variety of art media, learn how to use the creative process to define, plan, and achieve personal or professional goals.

**HD-157 Procrastination & Time Management**
1 credit, not offered every term
Provides students the opportunity to study procrastination habits and time management patterns. Course focuses on components of time organization, choices re: procrastination, and methods to improve overall use of time.
HD-158 Managing Change
1 credit, not offered every term
This course is designed to enhance each student's knowledge and understanding about transition and change in their own life and others around them.

HD-161 Multicultural Awareness
1 credit, not offered every term
Introduction to the complexities of multicultural issues and how they influence one another in everyday life.

HD-180 Career Development Internship
1-2 credits
Fall/Winter/Spring/Summer
Develop skills in a specific occupation and practice the career management skills necessary to obtain, sustain, and advance employment. A Training and Evaluation Plan is developed and managed in consultation with the student, internship supervisor, and faculty.

HD-202 Life Transitions
3 credits, Fall/Winter/Spring
Examines process and stages of life transitions. Helps re-entry adults identify personal strengths and barriers related to success in education and employment. Offers opportunities to practice interpersonal skills. Provides information about CCC campus and community resources which can assist students in reaching their goals. This course is part of Life & Career Options. Corequisite: HD-208.

HD-208 Career & Life Planning
3 credits, Fall/Winter/Spring
Helps re-entry adults identify interests, abilities, values and transferable skills and apply this information to goal setting and career decisions. Students identify and explore options for training, education, and employment. Covers job search skills such as interviewing, resume writing, and developing a career portfolio. Each student develops an action plan identifying goals and next steps. This course is part of Life & Career Options. Corequisite: HD-202.

HD-209 Job Search Skills
1-3 credits, not offered every term
Use a job search plan to conduct labor market research, develop job search networking relationships, and to prepare and present applications, cover letters, resumes, interviews, and thank you notes.

HD-280 Human Development/CWE
2-6 credits
Fall/Winter/Spring/Summer
Cooperative work experience. Provides students with career related experience on-the-job at a local organization. Required: Instructor consent and a CWE seminar.

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

Family Studies

HDF-130 Introduction to Family Development
1 credit, not offered every term
Designed to introduce front-line family workers and family development workers, who work in various community based child and family support agencies, to the concept of a strength-based approach to family development. Participants will acquire knowledge related to family development theory and have the opportunity to apply that knowledge to assist and support the family unit across the life span.

HDF-131 Communication in Family Development
1 credit, not offered every term
Designed to assist participants in strengthening their already present communication skills: spoken and written (expressive), and listening and reading (receptive), and to acquire new skills to become proficient family development communicators. Particular emphasis will be placed on the understanding and use of nonverbal body language (tone, gestures, facial expressions, etc.), understanding the role of empathy in communication, promoting cooperative solutions and working with language barriers or low levels of literacy.

HDF-132 Self-Care Family Development Workers
1 credit, not offered every term
Designed to assist participants in developing or clarifying their own personal vision for their work, as it relates to family development. Topics covered include: balancing work and family life, completing a Family Assessment and stress reduction and wellness issues.

HDF-133 Diversity in Family Development
1 credit, not offered every term
Designed to assist participants in explaining how “culture” is defined in the field of family development (diversity and oppression) and realizing why cultural competence is an important skill in this field. Other topics include barriers related to cultural competence and their impact, appreciating aspects of your own cultural identity and increasing one’s sensitivity to other cultures.

HDF-134 Strength-Based Assessment in Family Life Development
1 credit, not offered every term
Designed to assist family development workers help families identify and build on their strengths to achieve healthy self-reliance. Based on positive, mutually respectful relationships, workers communicate with families to help them recognize these strengths and the resources available to them. Participants will have the opportunity to review several strengths-based assessment tools.

HDF-135 Setting & Achieving Goals in Family Development
1 credit, not offered every term
Designed to provide family development workers with the skills needed to help families identify and set achievable goals, based on their own strengths. The importance of developing positive, mutually respectful relationships with families is emphasized - while techniques are offered to avoid families becoming dependent on the case worker.
HDF-136 Community Resources in Family Development
1 credit, not offered every term
Designed to provide family development workers with the information needed to assist families with identified special needs to access community resources. Such identified needs could include: specialized learning needs, family literacy issues, developmental delays, common mental health problems, issues related to domestic violence, alcohol and drug dependency, etc.

HDF-137 Home Visiting in Family Development
1 credit, not offered every term
Designed to provide family development workers with the skills necessary to conduct respectful home visits. Class discussions will include the role of the home visitor and the establishment of rapport with the families. Also covered are concerns for personal safety and other issues related to home visiting.

HDF-138 Facilitation Skills in Family Development
1 credit, not offered every term
Designed to provide family development workers with the facilitation skills necessary to conduct successful family meetings, support groups and community meetings. Class discussions will include the role of the family worker in helping families identify their informal support networks and the benefits to be gained from participating in support and advocacy groups.

HDF-140 Contemporary American Families
3 credits, Spring
Focuses on the diversity of the American family today, and a historical overview of changes in the family environment and structure. Become familiar with internal/external factors that influence families such as parenting, violence, gender, divorce, remarriage, economics, and culture.

HDF-141 Parent-Child Relations: Context & History
3 credits, Winter
Course covers history of child rearing in the U.S., child rearing patterns, parent-child relations at each developmental stage, special challenges faced by parents and children and child socialization strategies to help children become increasingly more competent.

HDF-142 Parent-Child Relations II: Practical Parenting
4 credits, Winter/Spring
This course is designed to assist students in the study of parent-child relations. This program is especially helpful for those who are in the child welfare or criminal justice system focusing on areas such as normative child development and parent/partner relationships. The participants will become familiar with the systemic family development model, which explains family functioning at different stages of child rearing as well as knowledge of brain development, raising an emotionally intelligent child, and temperament traits. This course uses a learner-centered design in which the instructor works with the learner to develop and attain goals throughout the course. It uses an outcomes-based model of instruction focusing on real-life adult roles of the pro-social parent and life-long learner. Recommended: Pass HDF-141.

HDF-225 Prenatal, Infant & Toddler Development
3 credits, Fall
Explores the principles of child development, prenatal through three years of age. Emphasis will be placed on the physical, intellectual, emotional and social growth and development of young children.

HDF-247 Preschool Child Development
3 credits, Winter
Emphasis on principles of development in children 2 to 6 years, including physical, cognitive, social and emotional growth, observation and assessment.

HDF-260 Understanding Child Abuse & Neglect
3 credits, Fall/Winter/Spring/Summer
Overview of child abuse problems for students interested in child care education and/or human services. A look at causes of abuse, abused child, abusive parents, role of teachers, areas of treatment, education, resources that can assist children and parents.

HDF-280 Child & Family Studies/CWE
2-6 credits, not offered every term
Cooperative work experience. Provides students with on-the-job experience in the field of early childhood care and education and/or family studies. Gain practical knowledge of various roles and responsibilities, including those of early childhood care and education practitioners or as child and family support personnel in a variety of agencies. Required: Instructor consent and a CWE seminar.

HE/HPE

Health

HE-151 Body and Drugs I
3 credits, Fall/Winter/Spring
The first of a two-course sequence, this course examines the history of the use of addictive drugs; addictive drug classifications; and the physiological impact of drugs on the body. This class will also review the stimulant group of drugs.

HE-152 Body and Drugs II
3 credits, Winter/Spring
The second of a two-course sequence, this course examines three drug categories (depressants, hallucinogens, and the “other” drugs): their history, and their physiological and psychological impact. Prerequisite: Complete HE-151.

HE-204 Nutrition & Weight Control
3 credits, Fall/Winter/Spring
Methods of maintaining or improving fitness by considering diets and dieting, obesity, types of exercise, physical testing, cardio-vascular fitness and nutritional concepts.
HE-205 Youth Addictions
3 credits, Winter/Spring
Increases knowledge of adolescent development and programs designed for prevention, assessment, intervention and treatment of chemically dependent youth. Investigates specific techniques for counseling youth. Required for Criminal Justice and Corrections students.

HE-249 Mental Health
3 credits, Fall/Winter/Spring
Examines factors which influence emotional and mental well-being. Emphasis on handling day-to-day situations in a positive, healthful manner.

HE-250 Personal Health
3 credits, Fall/Winter/Spring
Explores the interaction of health and the quality of life. Includes emotional behavior, drugs, disease, nutrition, human sexuality, cardiovascular functioning, and medical care.

HE-252 First Aid/CPR
3 credits, Fall/Winter/Spring
Immediate and temporary care for injuries and sudden illness. Covers poisoning, control of bleeding, and proper methods of transportation, splinting, and bandaging. Successful completion (A or B grade) of course leads to a Red Cross Responding to Emergencies, First Aid and Community CPR Certification.

HE-255 Body & Alcohol
3 credits, Fall/Winter/Spring
Covers alcohol as a drug, problem drinking, alcohol use and its effect on family, social and economic well-being, and the rehabilitation process.

HE-280 Health/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. Off-site work experience in a health-related occupation. Required: Instructor consent & a CWE Seminar.

HEP-295 Health & Fitness for Life
3 credits, Fall/Winter/Spring
Explores interaction of physical fitness and health. Meets three hours a week for personal fitness assessment and two hours of classroom sessions. Related topics include: nutrition, stress reduction, relaxation techniques, goal setting, and weight control.

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

Health Informatics

HIM-110 Health Information Technology I
4 credits, not offered every term
Introduces the concept of health information management and health informatics including the components of content, use the structure of healthcare data along with information keeping practices in both paper and electronic systems. Prerequisite: Pass RD-080 or placement in RD-090, pass WR-095 or placement in WR-121, and placement in MTH-020. Corequisite: HIM-120.

HIM-120 Health Information Technology 1 Lab
1 credit, not offered every term
Lab course for the HIM-110 lecture course. Allows students to use the skills and knowledge learned in HIM-110. Corequisite: HIM-110.

HIM-182 Healthcare Delivery Systems
3 credits, not offered every term
Explains the past, present, and future influences on the delivery of healthcare. Covers provider organizations and settings in health care, financing of healthcare, causes and characteristics of healthcare utilization in the United States, regulation and monitoring of healthcare systems and ethical issues associated with healthcare technology.

HIM-271 Quality Improvement in Health Care
3 credits, not offered every term
Covers medical staff organization, physician credentialing, and quality improvement techniques in the healthcare setting. Corequisite: HIM-274.

HIM-274 Quality Improvement in Healthcare Lab
1 credit, not offered every term
Lab course for HIM-271. Corequisite: HIM-274.

HIM-281 Data Management & Analysis 1
3 credits, not offered every term
Collection, retrieval, analysis, and quality review of administrative and clinical information and data. Corequisite: HIM-286.

HIM-283 Health Information Systems
4 credits, not offered every term
Introduces the history and current status of information systems in healthcare: information architectures, administrative and clinical applications, evidence-based medicine, information retrieval, decision support systems, security and confidentiality, bioinformatics, information system cycles, the electronic health record, key health information systems and standards, and medical devices. The course teaches strategies and tools to insure the development and/or selection of health information systems and discusses the role of healthcare information and communication technologies in healthcare delivery including their role in improving the quality, safety and efficiency of healthcare delivery.

HIM-285 Health Care Financing & Compliance
3 credits, not offered every term
Provides an understanding of the essential components of financing and compliance in health care facilities.

HIM-286 Data Management & Analysis 1 Lab
2 credits, not offered every term
Lab course for HIM-281. Allows students to practice skills and apply the knowledge learned in Data Management and Analysis 1. Corequisite: HIM-281.
HOR 111 Horticulture Practicum/Fall
6 credits, Fall
Practical horticulture practices which include seasonal activities covering container and field nurseries, greenhouse management, garden design, landscape installation and landscape management. Basic practices involved in planting, pruning, pest control, equipment operation, soil, water and fertilizer management. Industry field trips included. Projects parallel Horticulture classes for fall term. Class includes a lab component.

HOR 114 Garden Design
1 credit, Winter or Spring
Introductory course for students to gain understanding and skills in the area of planning landscape garden areas, including drawing skills to express ornamental garden schemes.

HOR 122 Greenhouse Crops-Potted Plants
3 credits, Fall
Environmental influences on plant growth, crop scheduling, greenhouse structures and equipment. Emphasis on foliage and flowering potted plant production. Class includes a lab component.

HOR 123 Landscape Maintenance
3 credits, Fall
Principles and practices of landscape maintenance, plant growth and development, soil-water-fertilizer management, pruning, turf, pest control, diagnosis of problems in trees and shrubs, and maintenance scheduling. Class includes a lab component.

HOR 124 Food Harvest
3 credits, Fall
Harvest systems for food safety and food quality that result in profitable farm-to-table operations. Food handling and storage for sustainable urban agriculture operations will be covered. Class includes a lab component.

HOR 125 Food Production in the Willamette Valley
3 credits, Fall
Exploration of historical, ethical, practical and scientific aspects of food production systems focusing on agricultural sustainability, including economic, social and environmental impacts of food and farming will be emphasized. Study of economical farming using systems thinking and critical thinking development will be utilized.

HOR 130 Plant Propagation Theory
3 credits, Winter
Covers plant anatomy and reproduction techniques of plants from seed, cuttings, grafting, division, and micro-propagation. Offers an in-depth overview of propagation systems that may be selected.

HOR 131 Tree & Shrub Pruning/Winter
3 credits, Winter
Emphasis on dormant pruning of fruiting and ornamental plants. Training in dormant pruning and training of grapes, fruit trees, deciduous, evergreens, ornamental trees and shrubs. Basic woody plant anatomy, growth, and development. Class includes a lab component.

HOR 132 Pesticide Selection & Use
3 credits, Winter
Plant protection methods for weed, insect or disease control. Laws and regulations related to safety, handling and storage of pesticides. Techniques for product selection, including chemical and non-chemical options, applicator safety and environmental protection included. Prepare and test for the Oregon Pesticide Applicator exams.

HOR 133 Horticulture Practicum/Winter
6 credits, Winter
Practical horticulture practices which include seasonal activities covering container and field nurseries, greenhouse crops, vegetable production, garden design, landscape installation and landscape management. Basic practices involved in propagation, transplanting, pruning, pest control, equipment operation, water and fertilizer management. Industry field trips included. Projects parallel Horticulture classes for winter term. Class includes a lab component.

HOR 134 Herb Growing & Gardening
1 credit, Winter or Spring
Study of herb plant propagation and garden use. Garden culture and design are covered.

HOR 135 Propagation of Edible Plants
3 credits, Winter
Survey and practice reproducing plants utilizing sexual and asexual propagation methods of organically produced food crops used for local production. Instruction will focus on desirable traits of specific varieties and crop replication methods for sustainable farm operations. Class includes a lab component.

HOR 136 Urban Agriculture Practicum/Winter
6 credits, Winter
Essential horticulture practices which include seasonal activities covering farm crop lay-out, edible crop installation and management. Basic practices involved in propagation, transplanting, pruning, pest control, equipment operations, water and fertilizer management and farm field trips included. This class provides students with experience in several areas of urban agriculture. Approximately one class, each week, will be spent by students on assigned work in seasonal farm project area activities. Training will be provided for each task. This format has been selected to create a hands-on experience for each student. Class includes a lab component.

HOR 140 Soils & Fertilizers
3 credits, Spring
Soil characteristics and management, including nutritional elements and the relationship between the soil and plant growth.
HOR-141 Urban Agriculture Practicum/Spring
6 credits, Spring
Essential horticulture practices which include seasonal activities covering farm crop lay-out, edible crop installation and management. Basic practices involved in transplanting, pruning, pest control, equipment operations, water and fertilizer management. Farm field trips included. This course provides students with experience in several areas of Urban Agriculture. Approximately one class, each week, will be spent by students on assigned work in seasonal farm activities. Class lecture and class field trips are an essential component of this course. This format has been selected to create a hands-on experience for each student. Class includes a lab component.

HOR-142 Greenhouse Crops-Bedding Plants
3 credits, Spring
Detailed study of environmental influences on individual crops, their requirements, scheduling, including annual, biennial, and perennial plant production. Class includes a lab component.

HOR-143 Horticulture Practicum/Spring
6 credits, Spring
Practical horticulture practices which include seasonal activities covering container and field nurseries, greenhouse crops, vegetable production, garden design, landscape installation and landscape management. Basic practices involved in transplanting, pruning, pest control, equipment operation, turf, soil, water and fertilizer management. Industry field trips included. Projects parallel Horticulture classes for spring term. Class includes a lab component.

HOR-144 Basic Pruning
1 credit, Winter
Why and how to prune trees, shrubs, and vines. Covers tools used for various pruning practices. Class includes a lab component.

HOR-145 Turf Installation & Maintenance
3 credits, Spring
Installation and maintenance of turf grasses commonly used in landscape construction. Emphasizes select cultural practices, irrigation, weed and pest identification and control. Class includes a lab component.

HOR-146 Fruit and Berry Growing
3 credits, Summer
Regionally appropriate fruit and berry production practices suitable for urban marketing will be explored. Class will utilize the Home Orchard demonstration fruit growing site on campus. Class includes a lab component.

HOR-147 Marketing Water Efficient Landscaping
1 credit, Spring
Exploring the principles of water conservation in the landscape and how to be more profitable by selling water conservation practices to residential and commercial end users.

HOR-148 Farm Equipment
3 credits, Spring
Identification and utilization of small-farm diverse crop production tools, which enhance development of high quality crops and efficiently use available labor and capital resources without resulting in adverse environmental impacts. Effects of soil tillage equipment use on the soil ecosystem, including intended and unintended effects will be studied. Class includes a lab component.

HOR-180 Career Development Internship
1 credit, Summer
The internship is an opportunity to develop entry-level skills in a specific occupational area and to practice the basic career management skills necessary to obtain, sustain, and advance employment. A training and evaluation plan is developed and managed in consultation with the student, internship supervisor, and faculty. This course is not applicable towards Horticulture AAS degree.

HOR-211 Native Plant Identification
1 credit, Summer
Identification and use of plants native to the Pacific Northwest and the use of plant keys.

HOR-212 Flower Arranger’s Garden/Fall
3 credits, Fall
Learn to identify and grow seasonal plants suitable for use as cut flowers and foliage. Includes basic floral design and visits to local cutting gardens. Ideal for garden designers, home gardeners, and florists. Class includes a lab component.

HOR-213 Computer-Aided Landscape Design
3 credits, Spring
Develop skills with Computer-Aided Design (CAD) software for creating landscape designs. Practice techniques utilized in common CAD programs used in the landscape industry. Class includes a lab component. Prerequisites: Pass CS-091 or placement in CS-120; and pass HOR-229.

HOR-215 Herbaceous Perennials
3 credits, Summer
The identification, propagation, selection and garden culture as well as individual attributes of herbaceous perennial plants, including the evolution of perennial garden design and current gardening styles. Class includes a lab component. Oregon State University transfer course.

HOR-216 Integrated Pest Management
2 credits, Winter
The development of an Integrated Pest Management (IPM) plan for landscape, nursery, greenhouse or agricultural industries. Plan incorporates pest detection, control practices and evaluates effectiveness. Recertification credits may be granted by the Oregon Department of Agriculture toward pesticide license renewal.

HOR-220 Plant Propagation/Fall
3 credits, Fall
Proper techniques for reproducing plants from seeds, cuttings, and grafting. Emphasis on seasonal plant production. Class includes a lab component.

HOR-222 Horticultural Computer Applications
2 credits, Winter
Utilizes database, spreadsheet, word processing, and other computer programs for record keeping and management for growers and landscape businesses. Prerequisite: Pass CS-091 or placement in CS-120.
HOR-224 Landscape Installation  
3 credits, Fall  
Materials and practices in landscape installation, including plan reading, materials take-off, estimating, bidding, scheduling, grading, construction materials, and plant installation. Class includes a lab component.

HOR-225 Principles of Arboriculture  
3 credits, Winter  
Management of trees in landscape, including residential, commercial, and urban settings, following course materials prepared by the International Society of Arboriculture. Students study the value of trees, including ways that trees enhance the physical, aesthetic, economic, and psychological experiences of people. Preparation for the ISA Certified Arborist Exam.

HOR-226 Plant Identification/Fall  
3 credits, Fall  
Identification of deciduous trees, shrubs, and groundcovers, including their cultural requirements in the landscape. Class includes a lab component. Oregon State University transfer course.

HOR-227 Plant Identification/Winter  
3 credits, Winter  
Identification of conifers and broadleaved evergreens, shrubs, and groundcovers, including their cultural requirements in the landscape. Class includes a lab component. Oregon State University transfer course.

HOR-228 Plant Identification/Spring  
3 credits, Spring  
Identification of flowering trees, shrubs, and groundcovers, including their cultural requirements in the landscape. Class includes a lab component. Oregon State University transfer course.

HOR-229 Basic Landscape Design  
3 credits, Fall  
Introduction to landscape planning, including basic drafting skills, grading, drainage, and site planning. Class includes a lab component.

HOR-230 Equipment Operation & Maintenance  
3 credits, Winter  
Selection, operation, and maintenance of power driven machines, such as mowers, rototillers, chain saws, edgers, sprayers, tractors, and related equipment for nursery and landscape applications. Class includes a lab component.

HOR-231 Irrigation/Drainage Design  
3 credits, Winter  
Design principles of irrigation and drainage systems for various situations, including underground and aboveground, residential and commercial systems. Class includes a lab component.

HOR-232 Commercial Floral Design  
3 credits, Winter  
Present design techniques, used by florists today, to create naturalistic centerpieces, corsages, and gift arrangements using fresh flowers. Cut flower conditioning and handling, wedding and sympathy design, and sales strategies will also be covered.

HOR-234 Intermediate Landscape Design  
3 credits, Winter  
Further skill development in drawing, site analysis, and design, including two, three, and four dimensional design concepts. Graphic exercises and model making skills will be included as well as the study of creative and practical solutions for various site and program requirements of commercial and residential landscape sites. Class includes a lab component. Prerequisite: Pass HOR-229.

HOR-235 Weed Identification  
2 credits, Fall  
Identification and life cycles of weeds commonly found in landscapes and nurseries. Recertification credits may be granted by the Oregon Department of Agriculture toward pesticide license renewal.

HOR-236 Insect Identification  
2 credits, Fall  
Identification and life cycles of insects which damage ornamental plants in greenhouses, landscapes, and nurseries. Recertification credits may be granted by the Oregon Department of Agriculture toward pesticide license renewal.

HOR-237 Disease Identification  
2 credits, Winter  
Identification of ornamental plant diseases which occur in greenhouses, landscapes, and nurseries. Recertification credits may be granted by the Oregon Department of Agriculture toward pesticide license renewal.

HOR-239 Tree Climber Training  
2 credits, Summer  
The safe use of rope and saddle tree climbing procedures will be covered through lecture, discussion, and field practice. For beginner to moderately experienced climbers. Class includes a lab component.

HOR-240 Irrigation/Drainage Practices  
3 credits, Spring  
Materials, equipment, and methods used to install irrigation systems in landscape areas. Emphasis on home lawns, gardens, and larger areas, including drainage methods for improved performances. Class includes a lab component.

HOR-241 Nursery Management  
3 credits, Fall  
Essentials of nursery practices, including containers and field growing practices, crop scheduling, management, and marketing.

HOR-242 Plant Propagation/Spring  
3 credits, Spring  
Proper techniques for reproducing plants from seed, cuttings, division, and micropropagation. Emphasis on seasonal plant production. Class includes a lab component.

HOR-244 Environmental Landscape Design  
3 credits, Spring  
Design of landscapes to develop ecosystems using plants and other landscape amenities to encourage wildlife and generate low maintenance habitat. Includes the proper uses of landscape features that build wildlife habitats and the study of various water environments.

HOR-246 Organic Farming and Gardening  
3 credits, Spring  
History, fundamental principles and practices of organic farming and gardening as applied to the maritime Pacific Northwest. Class includes a lab component.
HOR-247 Hardscape Installation
3 credits, Spring
Materials and construction methods used in landscape hardscape development with emphasis placed on design, materials selection, construction and maintenance of hardscape features for walls, patios, lighting, fencing, decks, and water features. Class includes a lab component.

HOR-248 Flower Arrangers Garden/CWE
3 credits, Spring
On-the-job experience in the various segments of horticulture. Students enroll in co-op after completing nine credits of horticulture courses. May be repeated for up to 6 credits. Required: A CWE seminar.

HOR-250 Western Herbs
2 credits, Fall
Introduces students to herbs that can be grown locally. Instruction will focus on the components and uses of herbs.

HOR-251 Herbal Products
1 credit, Winter
Instruction will be provided in making herbal teas, skin salve, tincture, infused oil, vinegar and syrup. Covers what ingredients to use and why each is important.

HOR-252 Kitchen Herbs
1 credit, Spring
Instruction will focus on how to use common herbs and spices as food and for craft. Practical instruction is provided to utilize herbs and spices.

HOR-280 Horticulture/CWE
3 credits, Fall/Winter/Spring/Summer
On-the-job experience in the various segments of horticulture. Students enroll in co-op after completing nine credits of horticulture courses. May be repeated for up to 6 credits. Required: A CWE seminar.

HOR-281 Horticulture/CWE
6 credits, Fall/Winter/Spring/Summer
On-the-job experience in the various segments of horticulture. Students enroll in co-op after completing nine credits of horticulture courses. Required: A CWE seminar.

HOR-282 Horticulture/CWE
3 credits, Fall/Winter/Spring/Summer
On-the-job experience in the various segments of horticulture. Students enroll in co-op after completing nine credits of horticulture courses. May be repeated for up to 6 credits. Required: A CWE seminar.

HOR-284 Urban Agriculture Farm Experience/CWE
6 credits, Summer
Centers on experimental learning as students work on the CCC campus farm using organic farming techniques which center on ecological and sustainable practices, through hands-on application of principles, practices, and management. Students will participate in marketing the harvest produced. Online study materials will supplement field studies. Students are allowed to enroll after completing nine credits of Urban Agriculture certificate classes. Required: A CWE seminar.

HPD
Courses with this prefix may not transfer to a four-year institution. Courses are intended to maintain or upgrade current certification/licensure or to acquire, or renew professional certifications.

Healthcare Professional Development

HPD-009 CPR-Initial
0.6 CEU, Fall/Winter/Spring/Summer
American Heart Association (AHA) Healthcare Provider CPR class. For initial training of AHA Healthcare Provider (Level C) CPR card.

HPD-009 CPR-Renewal
0.4 CEU, not offered every year
American Heart Association (AHA) Healthcare Provider CPR class. For recertification of AHA Healthcare Provider (Level C) CPR card.

HPD-009 EMT-Oregon Intermediate Bridge
5.6 CEU, not offered every term
Required certification upgrade for Oregon EMT-Intermediates. Enhances knowledge of roles and responsibilities of the OREMT-I, emergency pharmacology, venous access and medication administration, ECG interpretation and dysrhythmia management.

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

Human Services

HS-100 Introduction to Human Services
3 credits, Fall
Student will examine interpersonal skills, personal values, decisions and problems for human service trainees. Addresses stresses, demands, and rewards of working in this field. Required for Human Services Generalist degree.

HS-103 Ethics for Human Service Workers
2 credits, Winter
Explores the professional issues students will face when in a helping relationship. Introduces the professional codes of ethics associated with the helping professions. Addresses solving ethical dilemmas using professional guidelines. Topics include client rights, confidentiality, professional boundaries, legal issues in helping, competence, and cultural diversity.

HS-130 Introduction to Hospice Care
3 credits, not offered every term
For individuals, families, and professionals interested in learning about hospice care for the terminally ill. Issues include death, dying, and bereavement, with attention to psycho-social need, pain and symptom control, delivery of medical care, family dynamics, and philosophical and ethical questions. Required to become a Hospice Volunteer.
HS-154 Community Resources
3 credits, Winter
Explores local community social service resources. Identifies services, eligibility criteria, mission, policies, politics of agencies, identification of client needs, various referral processes, and historical, political and social trends.

HS-156 Interviewing Theory & Techniques
3 credits, Winter
Provides the theory and specific techniques required for entry-level interviewing in human service settings.

HS-165 Activity Director
3 credits, not offered every term
Provides training for activity directors in long-term care and residential facilities. Focuses on therapeutic activities to promote continual growth and development in residents.

HS-170 Introduction to Field Experience-Human Services
3 credits, Spring
Exploration of Human Services in the workplace and organizations, including work stress, supervision, ethics, cultural diversity, and social responsibility. Prerequisite to Human Services/CWE courses.

HS-211 HIV, TB, and Infectious Diseases
1 credit, Winter
Course explores the relationship between substance abuse and infectious diseases, and discuss methods for reducing transmission of these diseases. Topics will include HIV/AIDS, tuberculosis, hepatitis, and sexually transmitted infections. Course will provide students with techniques for assisting clients with assessing risk, practicing harm reduction, and evaluating treatment options.

HS-216 Group Counseling Skills
3 credits, Spring
Provides students with strategies and skills for group work with a variety of clients. Explores leadership styles and skills, group formation and stages, and the ethics of working with groups. Will address knowledge needed to develop, run, and evaluate groups for a variety of human service topics, including substance abuse. Theories of therapeutic group work will also be discussed.

HS-217 Helping Skills & Diverse Populations
2 credits, not offered every year
Addresses the helping skills necessary to provide career services in a multicultural world. Part of a series toward earning a Global Career Development Facilitator credential endorsed by the National Career Development Association.

HS-218 Career Development Models & Assessments
2 credits, not offered every year
Addresses career development models and career assessment tools. Part of a series toward earning a Global Career Development Facilitator credential endorsed by the National Career Development Association.

HS-219 Training Clients/Peers & Employability Skills
2 credits, not offered every year
Addresses the skills needed to train and work with groups, as well as clients’ employability issues. Part of a series toward earning a Global Career Development Facilitator credential endorsed by the National Career Development Association.

HS-220 Labor Market Information & Technology in Career Planning
2 credits, not offered every year
Addresses the role information and technology plays in career planning and advancement. Part of a series toward earning a Global Career Development Facilitator credential endorsed by the National Career Development Association.

HS-221 Ethics & Consultation
2 credits, not offered every year
Addresses the ethical considerations and consultation practices in the field of career development and career advancement. Part of a series toward earning a Global Career Development Facilitator credential endorsed by the National Career Development Association.

HS-222 Program Management & Public Relations
2 credits, not offered every year
Plan, design, implement, and market services in the field of career development and/or career advancement. Part of a series toward earning a Global Career Development Facilitator credential endorsed by the National Career Development Association.

HS-260 Victim Advocacy & Assistance
4 credits, Fall/Spring
Provides basic skills for working with a diverse group of crime victims, including, but not limited to, victims of homicide, sexual assault, child abuse and domestic violence. Topics covered include: theories of victimology, victim’s rights evolution, crisis intervention, stress reactions and post-traumatic stress syndrome.

HS-280 Human Services Generalist I: CWE/Practicum
4 credits, Fall
Cooperative Work Experience. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology; and other occupations. Required: Instructor consent. Prerequisite: HS-170 (except CDF students). Corequisite: CWE-281.

HS-281 Human Services Generalist II: CWE/Practicum
4 credits, Fall
Cooperative Work Experience level II. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology; and other related occupations. Required: Instructor consent. Prerequisite: HS-170. Corequisite: CWE-282.

HS-282 Human Services Generalist III: CWE/Practicum
4 credits, Spring
Cooperative Work Experience level III. Supervised experience in human services including but not limited to: social service; early childhood care; criminal/juvenile justice; gerontology; and other related occupations. Required: Instructor consent. Prerequisite: HS-170. Corequisite: CWE-283.
HST

History

HST-101 History of Western Civilization
4 credits, Fall/Winter
Origins and development of Western Civilization with a primary focus on Europe from ancient times to ca. 1300. Recommended: Pass RD-090 or placement in RD-115.

HST-102 History of Western Civilization
4 credits, Winter/Spring
Origins and development of Western Civilization with an emphasis on Europe from ca. 1300 to 1800. Recommended: Pass RD-090 or placement in RD-115.

HST-103 History of Western Civilization
4 credits, Fall/Spring
Development of Western Civilization with an emphasis on Europe from the 19th century to the present. Recommended: Pass RD-090 or placement in RD-115.

HST-136 History of Popular Culture, Entertainment & Sports
4 credits, not offered every year
Explores the topics of popular culture, entertainment and sports in western civilization from ancient Greece to the present. Recommended: Pass RD-090 or placement in RD-115.

HST-137 History of Science, Medicine & Technology
4 credits, not offered every year
Traces the major developments in western civilization in the fields of science, medicine and technology from ancient Greece to the present. Includes an examination of the biographies of prominent scientists, doctors and engineers. Recommended: Pass RD-090 or placement in RD-115.

HST-138 History of Love, Marriage & the Family
4 credits, not offered every year
Examines the concept of love and the institutions of marriage and the family in western civilization from ancient Greece to the present. Includes a consideration of the ideas of prominent thinkers, artists and political leaders. Recommended: Pass RD-090 or placement in RD-115.

HST-201 History of the United States
4 credits, Fall
Covers the period in American history from first European contact to the Age of Jackson. Prerequisites: Pass RD-090 or placement in RD-115, pass WR-095 or placement in WR-121. Recommended: Sequence of HST-201, HST-202 and HST-203 is taken in order.

HST-202 History of the United States
4 credits, Winter
Covers the period of United States history from the Age of Jackson to World War I. Prerequisites: Pass RD-090 or placement in RD-115, pass WR-095 or placement in WR-121. Recommended: Sequence of HST-201, HST-202 and HST-203 is taken in order.

HST-203 History of the United States
4 credits, Spring
Covers the period of United States history since WWI. Prerequisites: Pass RD-090 or placement in RD-115, pass WR-095 or placement in WR-121. Recommended: Sequence of HST-201, HST-202 and HST-203 is taken in order.

HST-210 The Great Depression & New Deal in America
4 credits, not offered every term
Explores the contours of the Great Depression and New Deal in American history. Course includes an examination of economic, political, social, and cultural factors and forces at play in America during the Depression era (1929-1941) with an emphasis on the New Deal and its successes, failures, and legacy. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

HST-220 Introduction to Oral History
4 credits, not offered every term
Course covers the origins and development of oral history as an academic discipline, with explorations of key oral history documents and projects over the last century. Also covers methods, techniques, ethics, and best practices in the production of an oral history project. Each class completes oral history interviews with local residents in regard to a specific time period in 20th century American history. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

HST-280 History/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. Provides students with on-the-job work experience in the field of history. Required: Instructor consent & a CWE seminar.

HUM

Humanities

HUM-160 Faith & Reason
5 credits, not offered every term
Introduction to classical philosophy, sacred texts, modern fiction, poetry, theology, evolutionary biology, and cosmology. Consideration of how personal concepts of faith and reason and institutions of science and religion, shape personal intellectual landscapes. Recommended: Pass RD-090 or placement in RD-115.

HUM-170 Metamorphoses
5 credits, not offered every year
Investigates the process of change within human cultures and individuals. By exploring myth, science, art, religion, and literature, we approach a better understanding of the ability of humans to change. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

HUM-180 Pathway to Sustainability
5 credits, Fall
Can we create a more sustainable and just world? Will we question our assumptions regarding economic models, democracy, our relationships with the environment, and social structures? What are the roots of the current ecological crisis? Recommended: Pass RD-090 or placement in RD-115.

HUM-181 Pathway to Sustainability
5 credits, Winter
Can we create a more sustainable and just world? How do socially meaningful changes come about? What are the ecological and social repercussions of the choices we make? Are ecological and social justice concerns linked? Recommended: Pass RD-090 or placement in RD-115.
HUM-182 Pathway to Sustainability
4 credits, Spring
Can we create a more sustainable and just world? What can our personal roles in change be? How can we stimulate local sustainable economies? What analysis is useful in assessing ecological impacts? Recommended: Pass RD-090 or placement in RD-115.

HUM-233 Electronic Culture
4 credits, not offered every term
An introduction to the interdisciplinary field of electronic culture, focusing on the use of electronic computer technology by individuals and groups. Examines transformation of self, identity, communication, and development of electronic communities and subcultures. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

HUM-235 Perspectives on Terrorism
4 credits, not offered every term
Explores the ways in which different academic disciplines in the social sciences and humanities construct historical, psychological, cultural, theological, sociological, and philosophical arguments and themes around the topic of terrorism and terrorist-related issues. Identifies underlying assumptions upon which these arguments and themes are based and considers the cultural expressions they both engender and reflect. Prerequisites: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

HUM-240 American Military Conflict: Total War
4 credits, not offered every term
Provides students with the fundamental knowledge of the politics and geography of United States military operations when conducting “Total War” as applied in conflicts from The Civil War through WWII. Recommended: Pass RD-090 or placement in RD-115.

HUM-241 American Military Conflict: The Cold War
4 credits, not offered every term
Provides students with the fundamental knowledge of the politics and geography of United States military operations when conducting “The Cold War” as applied in conflicts in Korea, Vietnam and the planned defense of Western Europe. Recommended: Pass RD-090 or placement in RD-115.

HUM-242 American Military Conflict: The War on Terror
4 credits, not offered every term
Provides students with the fundamental knowledge of the politics and geography of United States military operations when conducting “The War on Terror,” as applied in conflicts in Libya, Iraq, Afghanistan, and various other parts of the world. Pass RD-090 or placement in RD-115.

J

Journalism

J-134 Photojournalism
4 credits, not offered every term
Introduces the student to photojournalism, emphasizing composition, lighting and creative ways to illustrate a news story through weekly shooting assignments. Recommended: Basic photography skills.

J-211 Mass Media & Society
4 credits, not offered every term
This course takes students through a critical study of the production and consumption of mass media, including television, radio, books, film, newspapers, advertising and the Internet. Students also examine the economic and social organization of mass media, the growth of new media technologies, and the relationship between media and the public. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

J-215 College Newspaper Lab: Writing and Photography
1-3 credits, Fall/Winter/Spring
Students work as writers, photographers and editors on The Clackamas Print, the college’s award-winning student-run newspaper and its website. Students study and produce news stories and photos. In doing so, they learn different writing styles, photography rules, ethical standards of news gathering and the rights of a free press in a democracy. May be repeated up to 9 credits. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121; pass J-216.

J-216 Reporting
4 credits, Fall/Spring
Introduces students to the fundamentals of journalism: news gathering, news writing style, interviewing, the laws of libel copyright and the rights and responsibilities of a free press in a democracy. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

J-220 Introduction to Broadcast Journalism
4 credits, Fall/Winter/Spring
Offers students interested in broadcast journalism basic skills of writing, reporting and camera operation for broadcast. Lab component included. Recommended: Pass WR-095 or placement in WR-121.

J-221 Broadcast Journalism
4 credits, Fall/Winter/Spring
Offers students interested in broadcast journalism intermediate skills of editing, compression and uploading for broadcast. Lab component included. Recommended: Pass WR-095 or placement in WR-121. Prerequisite: Pass J-220 with C or better or instructor consent.

J-222 Advanced Broadcast Journalism
4 credits, Fall/Winter/Spring
Offers students interested in broadcast journalism advanced skills of managing reporters, videographers and a web presence in a broadcast newsroom. Lab component included. Recommended: Pass WR-095 or placement in WR-121. Prerequisite: Pass J-220 and J-221 with C or better or instructor consent.
J-226 College Newspaper: Design and Production  
4 credits, Fall/Winter/Spring  
Students learn Adobe InDesign, write headlines, lay out pages and use Adobe InDesign software to produce and ultimately distribute the weekly student newspaper, The Clackamas Print. May be repeated for up to 12 credits. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

J-230 Multimedia Reporting  
4 credits, Winter  
Provides students with hands-on training in news reporting for the Internet, including writing, blogging, podcasting, digital photography and audio slide shows. Students will also study and apply media law including libel, copyright and the rights of a free press in a democracy. Recommended: pass WR-095 or placement in WR-121.

J-280 Journalism/CWE  
2-6 credits, Fall/Winter/Spring  
Cooperative work experience. Provides students with on-the-job experience and training related to journalism. Required: Instructor consent & a CWE seminar.

J-280A Public Relations/CWE  
2-6 credits, Fall/Winter/Spring  
Provides students with on-the-job experience and training related to public relations. Required: Instructor consent & a CWE seminar.

LIB  
Library  
LIB-101 Introduction to Library Research  
1 credit, Fall/Winter/Spring  
Trains students in the use of a variety of print and electronic information resources, search tools, and source citation. Excellent preparation for term papers and other research assignments. Recommended: Pass CS-090 or equivalent experience.

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

Medical Assistant  
MA-110 Medical Terminology  
3 credits, Fall/Winter/Spring/Summer  
Understanding and effectively communicating with other healthcare professionals. Includes pronunciation, spelling, and meaning of words. Introduction to pathophysiology/disease processes.

MA-112 Medical Office Practice  
4 credits, Fall  
Fundamental information pertaining to the ambulatory care setting. Examines medical law and bioethics and introduces students to the administrative and transdisciplinary skills/competencies of a medical assistant. Required: Instructor consent. Corequisites: BI-120 and MA-145.

MA-115 Phlebotomy for Medical Assistants  
1 credit, Fall/Spring  
Develops basic understanding and application of blood specimen collection and handling techniques used in the ambulatory care setting and hospital laboratory setting. Restricted: Clinical Laboratory Assistant and Medical Assistant students only. Required: Instructor consent. Prerequisites: Pass MA-116, MA-117, MA-118, MTH-054. Corequisite: MA-121.

MA-116 Introduction to Medications  
3 credits, Winter  

MA-117 Clinical Lab Procedures I  
2 credits, Winter  

MA-118 Examination Room Techniques  
4 credits, Winter  

MA-119 Medical Assisting Practicum  
9 credits, Spring  
Under supervision within the ambulatory care setting, the student will apply both administrative and clinical knowledge and practices as attained within the Medical Assisting course curriculum. Required: Instructor consent. Student must complete and pass criminal history background check and urine drug/alcohol screen in order to be placed in a practicum site. Prerequisites: Pass MA-115 and MA-121.
MA-121 Clinical Lab Procedures II
2 credits, Spring
Designed to instill a basic understanding of simple, common laboratory terminology and procedures used in a general medical office laboratory to aid the physician in the diagnosis and treatment of disease. Laboratory safety, the prevention of blood born disease transmission and scope of practice will be emphasized. Required: Instructor consent. Enrolled in the Medical Assistant program. Prerequisites: Pass MA-117.

MA-145 Insurance & Health Information Management
3 credits, Fall

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

Mechanical Engineering Technology

For additional information contact the Manufacturing Department at 503-594-3318.

MET-112 Introduction to Engineering and Technical Careers
2 credits, Fall/Winter/Spring
This course is designed to provide an overview of five major engineering disciplines, their subsets and their respective career pathways. This course will also introduce students to the economic, environmental, social, political, ethical, as well as the health and safety realities of the engineering work environment. This course is intended to guide students in making appropriate career choices by exploring the following topics: engineering job demands, earning potential, marketability, licensure, and continuing education requirements.

MET-150 Principles of Engineering-PLTW
6 credits, not offered every term
Helps students understand the field of engineering/engineering technology. Explores various technology systems and manufacturing processes and how math, science and technology are used in the engineering problem solving process. Includes concerns about social and political consequences of technological change. This course is part of the national Project Lead the Way curriculum.

MET-151 Introduction to Engineering Design-PLTW
6 credits, not offered every term
Emphasizes problem-solving skills by using a design development process. Models of product solutions are created, analyzed and communicated using solid modeling computer design software. This course is part of the national Project Lead the Way curriculum.

MET-152 Digital Electronics-PLTW
6 credits, not offered every term
Covers applied logic that encompasses the application of electronic circuits and devices, as well as AC and DC electrical fundamentals. Uses computer simulation software to design and test digital circuitry prior to the actual construction of circuits and devices. This course is part of the national Project Lead the Way curriculum.

MET-153 Computer-Integrated Manufacturing-PLTW
6 credits, not offered every term
Applies the principles of robotics and automation to engineering and manufacturing. Students use CNC equipment to produce actual models of their three-dimensional designs. This course is part of the national Project Lead the Way curriculum.

MET-170 Introduction to Manufacturing Processes
3 credits, Spring
This is a survey course to introduce students to the fundamental processes that are used to manufacture everyday products. Includes machining, casting, forming, welding, molding, composites and microelectronics fabrication.

MET-211 Statics
4 credits, not offered every term
Application of the fundamental principles of mechanics of rigid bodies to typical engineering problems involving force systems in static equilibrium; moments and couples, structures, vector algebra, distributed forces, friction, center of gravity, center of mass and area moment of inertia. Prerequisites: MTH-111.

MET-213 Strength of Materials
4 credits, not offered every term
Introduces the mechanics of deformable bodies with an emphasis on principles of stress and strain, failure criteria and design concepts. Covers simple bending of beams and associated deflections; shear stresses in trusses, beams and frames; combined stresses due to bending, torsion, shear and axial loads. Additional topics include transformation of stress, principle stresses, Mohr's circle, stability and buckling. Prerequisites: MET-211.

Manufacturing Technology

The Manufacturing Department has a variety of programs and classes. For additional information contact the Manufacturing Department at 503-594-3318.

MFG-101 Essential Skills for Manufacturing
1-6 credits, not offered every term
This course focuses on the basic skills for entry-level operator, processor and assembler jobs in the manufacturing and logistics industries. Specialized curriculum covers print reading, precision measurement, manufacturing processes, shop math, safety, workplace readiness, team building and communication. No prior experience is necessary.
MFG-104 Print Reading
2 credits, Fall/Winter/Spring
Introduction to basic print reading. Students will use the principles of orthographic projection and current ASME standards as they apply this knowledge to interpreting manufacturing prints.

MFG-105 Dimensional Inspection
2 credits, Winter
Covers precision measuring tools such as micrometers, dial indicators, gauge blocks, sine bars and other instruments used in quality control of manufactured products.

MFG-106 Applied Geometric Dimensioning & Tolerancing for Manufacturing
3 credits, Spring
Introduces participants to the application of gauging and inspection using Geometric Dimensioning and Tolerancing. Students will identify inspection equipment and inspect GD&T characteristics while experiencing their manufacturing implications.

MFG-107 Industrial Safety & First Aid
3 credits, Fall/Winter/Spring
The Industrial Safety course is designed to provide the student with a basic understanding of safety hazards and first aid in the workplace. Includes eye safety, grinding wheel hazards, electrical/chemical hazards, slips, falls and back injuries. Instruction in Red Cross first aid, Automated External Defibrillator (AED) and CPR.

MFG-109 Computer Literacy for Technicians
3 credits, Fall/Winter/Spring
Presents the uses of computers in business and industry. Subjects covered include computer platforms, basic hardware, data communication, and operating systems. Reviews and uses word processing, spreadsheet, and database software for the PC.

MFG-110 Manufacturing Special Projects
1-9 credits, Fall/Winter/Spring
Allows students a great deal of latitude in project selection, design, and production utilizing manual machine tools, CNC machine tools, CAD/CAM and EDMs. A solid understanding of all basic machine tools is expected. Required: Instructor consent.

MFG-111 Machine Tool Fundamentals I
3-9 credits, Fall/Winter/Spring
Covers machine tool operations including drill presses, lathes, and milling machines. Includes internal and external threading. Recommended: Completion of MFG-104 and MFG-107.

MFG-112 Machine Tool Fundamentals II
3-9 credits, Fall/Winter/Spring
Covers setup and operation of the vertical milling machine and boring techniques on the lathe. Includes surface grinding and selection of abrasive grinding wheels. Recommended: Completion of MFG-111.

MFG-113 Machine Tool Fundamentals III
3-9 credits, Fall/Winter/Spring
Topics include offset boring heads, rotary tables, indexing devices, and taper attachments. Also covers applied technical math, inspection techniques, optical comparators, coordinate measuring machines, and cylindrical grinding. Recommended: Completion of MFG-111 and MFG-112.

MFG-123 Instrumentation and Controls
3 credits, Winter
Course is intended to provide the industrial maintenance technician with knowledge and skills in the areas of process measurement, control and data acquisition. Students will become familiar with common sensors and actuator and their applications. Instruction will also be given on application development in NI LabView to create process control programs. Recommended: Completion of MFG-130 or EET-137.

MFG-131 Basic Electricity II
3 credits, Winter
Covers application of several theories learned in previous term. Additional topics will include: motors, controls, alignment, pulleys and gears, troubleshooting theory, power distribution and lighting, electrical wiring and schematics. Recommended: Completion of MFG-130 and MTH-050.

MFG-132 Basic Electricity III
3 credits, Spring
This course offers continued study in the control of industrial electric motors. Concepts in the application of relays, motor starters, switches and overload protection are explored from both a practical and theoretical viewpoint. Wiring techniques and electrical devices for residential, commercial and industrial facilities are presented along with hands-on activities. Additional topics include: electrical conductors, installation materials, and the scope of work performed by licensed electricians. Recommended: Completion of MFG-130 and MFG-131.

MFG-133 Programmable Logic Controllers
3 credits, Spring
A study of the basic skills necessary to program, install, and maintain industrial control systems utilizing programmable logic controllers. Course content lays a foundation of hardwired relay control systems and components then build on this for an understanding of programmable logic controllers (PLC) systems. Recommended: Completion of MFG-130.

MFG-140 Principles of Fluid Power
3 credits, Winter
Course provides student with instruction in the use of hydraulics and pneumatics in industry covering the fundamentals of hydraulics, basic components (valves, cylinders, pumps, motors, piping, fluid, fluid conditions, and accessories). Recommended: Pass MTH-050.
MFG-200 Introduction to CNC
1 credit, not offered every term
Short course to prepare students to be entry-level CNC machine operators. Covers fundamentals of operation, setup principles and G & M code programming. Students will use hands-on activities on industrial milling and turning centers. Recommended for individuals with limited knowledge of CNC machining. Recommended: Completion of MFG-111.

MFG-201 CNC I: Set-up & Operation
4 credits, Fall
“Hands-on” class will teach students how to set-up and operate CNC milling centers and will include an introduction to basic G&M-code programming. Designed for persons with little or no previous experience. Recommended: Completion of MFG-109, MFG-112 and MTH-050.

MFG-202 CNC II: Programming & Operation
4 credits, Winter
Places a heavy emphasis on writing G&M-code. Students will be taught more advanced programming and operation of CNC milling centers and basic programming, set-up and operation of CNC turning centers. Recommended: Completion of MFG-201.

MFG-203 CNC III: Applied Programming & Operation
3 credits, Spring
Students work individually or in small groups to design, program, manufacture and test advanced projects using: CNC mills, CNC lathes, Electrical Discharge Machines and various software applications. Introduction to principles and operation of EDM included. Recommended: Completion of MFG-201 or MFG-204.

MFG-204 Computer-Aided Manufacturing I
4 credits, Fall
Introduction to computer-aided part programming. Students will use CAD/CAM software to generate NC code to produce machined products. Model creation, process verification, code generation, and CAD/CAM integration will be covered. Recommended: Completion of MFG-109, MFG-112.

MFG-205 Computer-Aided Manufacturing II
4 credits, Winter
Continuation of CAM I. Includes instruction in Mastercam surfaces and lathe and solid modeling software. Emphasis on hands-on manufacturing activities. Additional topics might include reverse engineering, automation, robotics and motion control. Recommended: Completion of MFG-204.

MFG-206 Computer-Aided Manufacturing III
3 credits, Spring
Final class in the Computer-Aided Manufacturing series will concentrate on a capstone project. Students will design, program, and fabricate an industrial caliber independent project. Recommended: Completion of MFG-205.

MFG-209 Programming and Automation for Manufacturing
3 credits, Winter
High-level computer literacy for technologists. Focus is on structured computer programming in Visual Basic language and the application of programming industrial automation. Hands-on experience in data acquisition. Basic knowledge of the PC required. Recommended: Completion of MFG-109.

MFG-210 CAM Special Projects
1-4 credits, not offered every term
Allows students to integrate and improve CNC and CAD/CAM manufacturing skills. Students are assigned a variety of hands-on projects based on their skill level and interest. Recommended: Completion of MFG-201 and MFG-204. (May be taken concurrently with MFG-204).

MFG-211 Machine Tool Fundamentals IV
6 credits, Fall/Winter/Spring
Concentrates on CNC setup and operation and on surface grinding. Students will develop and apply their machining skills while creating products in a team environment. Additional topics may include fixture design and cutting mechanics. Recommended: Completion of MFG-104, MFG-105 and MFG-113.

MFG-221 Materials Science
3 credits, Spring
Introduces metallurgy and materials science. Extractive and physical metallurgy will be covered. Specific topics include heat treatment, materials analysis, the iron carbon phase diagram, composites, ceramics and industrial plastics.

MFG-271 Mastercam Mill I
4 credits, not offered every term
Covers the creation and manipulation of two and three dimensional wire frame models as well as the creating, editing, and verification of 2-1/2 axis toolpaths. A fundamental understanding of the CAD/CAM process will be gained.

MFG-272 Mastercam Mill II
4 credits, not offered every term
Students construct three-dimensional geometric models using solids and surface modeling techniques. Students program models using advanced multi-axis programming techniques utilizing all aspects of roughing and finishing. Projects verified with solids toolpath verification. Recommended: Completion of MFG-271 or prior experience.

MFG-273 Mastercam Lathe/Mill/Multi-Axis
4 credits, Spring
The fundamentals of Mastercam Lathe and mill/turn toolpaths and provides demonstrations and exercises on new and current programming techniques for advanced mill/turn machining centers. Additionally, the strategic use of multi-axis machining will be discussed. Highlights of dynamic milling, machine simulation, program documentation and set-up sheets will be provided. Some student projects will be machined on state-of-the-art equipment in the advanced manufacturing lab. Prerequisites: MFG-271, MFG-204, or instructor consent.

MFG-280 Manufacturing Technology/CWE
1-6 credits
Fall/Winter/Spring/Summer
Cooperative work experience. Practical experience in the manufacturing trades. Coordination of instruction will occur with industry and the manufacturing and cooperative work departments. Required: Instructor consent and a CWE seminar.
MTH

Mathematics

MTH-010 Fundamentals of Arithmetic I
4 credits, Fall/Winter/Spring/Summer
Reviews operations on whole numbers, elementary fraction concepts, operations on decimals, and measurement.

MTH-020 Fundamentals of Arithmetic II
4 credits, Fall/Winter/Spring/Summer
Topics include factors and multiples, operations on fractions, percents, ratios and proportions, powers and square roots, introduction to graphs, signed numbers and effective study skills. Prerequisite: Pass MTH-010 with a C or better or placement in MTH-020.

MTH-050 Technical Mathematics I
3 credits, Fall/Winter/Spring/Summer
Designed for career and technical students. The topics focus on critical thinking, problem solving and mathematical communication using applications in applied arithmetic, measurement, geometry, and statistics and probability. Prerequisite: Pass MTH-020 with a C or better or placement in MTH-050 or MTH-060.

MTH-052 Medical Calculations for Nurses
4 credits, not offered every term
Topics include problem solving, ratios and proportions, percents, accuracy and precision of metric, apothecary and household systems of measurement, and calculating oral and parenteral medication doses as well as intravenous and critical care calculations. Required: Instructor consent. Restricted to WIIN students. Prerequisite: Pass MTH-020 with a C or better or placement in MTH-060. This course cannot be waived.

MTH-054 Medical Calculations for Medical Assistants
4 credits, not offered every term
Topics include problem solving, ratios and proportions, percents, accuracy and precision of metric, apothecary and household systems of measurement and calculating medication doses. Required: Instructor consent. Prerequisite: Pass MTH-020 with a C or better or placement in MTH-060. This course cannot be waived.

MTH-060 Algebra I
4 credits, Fall/Winter/Spring/Summer
Designed for review or for the beginner, this course is an introduction to topics in algebra. Expressions, equations, and inequalities are explored numerically, symbolically, graphically, and verbally. Prerequisite: Pass MTH-020 with a C or better or placement in MTH-060.

MTH-065 Algebra II
4 credits, Fall/Winter/Spring/Summer
The second term of topics in Algebra. This course continues the exploration of expressions, equations, and inequalities numerically, symbolically, graphically, and verbally. Prerequisite: Pass MTH-060 with a C or better or placement in MTH-065.

MTH-080 Technical Mathematics II
3 credits, not offered every term
The second in a sequence designed for career and technical students. The topics focus on critical thinking, problem solving, and mathematical communication using applications in arithmetic, algebra, geometry, and trigonometry. Prerequisite: Pass MTH-050 with a C or better or instructor consent.

MTH-082A Wastewater Math I
1 credit, Fall
Quantitative component to understanding wastewater operations. Simple unit conversions, fraction to decimal conversions and more complicated problem solving as applied to wastewater preliminary and primary treatment. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-080 or MTH-095. Corequisite: WQT-110. This course cannot be waived.

MTH-082B Waterworks Math I
1 credit, Fall
Problem solving for waterworks applications. Introduction to basic algebra and math concepts, conversions and calculations encountered in the waterworks industry. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-080 or MTH-095. Corequisite: WQT-111. This course cannot be waived.

MTH-082C Wastewater Math II
1 credit, Winter
Quantitative component to understanding analysis and operations of secondary wastewater systems. Flow rate, chemical dosage, treatment plant loading, treatment process efficiency, unit conversion and process control. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-080 or MTH-095. Corequisite: WQT-120. This course cannot be waived.

MTH-082D Waterworks Math II
1 credit, Winter
Problem solving for waterworks applications. Introduction to C.T. calculations, chemical concentrations, Pounds formula, and basic hydraulics. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-080 or MTH-095. Corequisite: WQT-121. This course cannot be waived.

MTH-082E Math for High Purity Water
1 credit, not offered every year
Basic math for high purity water concepts. Measurements accuracy, rounding rules and errors, significant figures, scientific notation, metric prefixes, simple statistics, average and standard deviation of a population. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-080 or MTH-095. Corequisite: WQT-125. This course cannot be waived.

MTH-095 Algebra III
4 credits, Fall/Winter/Spring/Summer
The third term of topics in algebra using the rule-of-four approach is designed to prepare students for transfer-level math courses. This course emphasizes problem-solving and graphical techniques with the use of a graphing utility. Prerequisite: Pass MTH-065 with a C or better or placement in MTH-095.
MTH-105 Introduction to Contemporary Math
4 credits, Fall/Winter/Spring/Summer
A transfer-level mathematics course for non-science majors. Topics covered in this course focus students on critical thinking, problem solving, mathematical communication. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-095 with a C or better or placement in MTH-105 or MTH-111.

MTH-111 College Algebra
5 credits, Fall/Winter/Spring/Summer
A transfer course designed for students preparing for trigonometry, statistics or calculus. The focus is on the analysis of piecewise, polynomial, rational, exponential, logarithmic, power functions and their properties. These functions will be explored symbolically, numerically, and graphically in real life applications and mathematical results will be analyzed and interpreted in the given context. The course will also include transformations, symmetry, composition, inverse, regression, the binomial theorem and an introduction to sequences and series. Recommended: Pass RD-090 or placement in RD-115; Pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-095 with a C or better or placement in MTH-111.

MTH-112 Trigonometry/Pre-Calculus
5 credits, Fall/Winter/Spring/Summer
A transfer course designed to prepare students for calculus. AMATYC standards-based approach utilizing the rule of four to analyze elementary functions and applications is used for this course. The rule of four requires that each topic should be presented symbolically, graphically, numerically, and verbally. Topics include trigonometric functions, trigonometry developed from the unit circle, right triangle trigonometry, inverse trigonometric functions, the laws of sines and cosines, trigonometric identities, and conic sections. Students will also learn to use vectors, polar equations, and parametric equations. Particular attention will be paid to modeling applications and solving mathematical problems. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-111 with a C or better or placement in MTH-112.

MTH-205 A Bridge to University Mathematics
3 credits, not offered every term
A “bridge course” designed to help students transition from computation-based mathematics to the more proof-based curriculum typical of junior-senior collegiate level courses. Topics include: group theory, elementary set theory, proof, and argumentation. Prerequisite: MTH-112 or instructor consent.

MTH-211 Fundamentals of Elementary Math I
4 credits, not offered every term
This course is the first in a sequence of three courses designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-095 with a C or better or placement in MTH-111.

MTH-212 Fundamentals of Elementary Math II
4 credits, not offered every term
This course is the second in a sequence of three courses designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-211 with a C or better or instructor consent.

MTH-213 Fundamentals of Elementary Math III
4 credits, not offered every year
This course is the third in a sequence of three courses designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-212 with a C or better or instructor consent.

MTH-243 Statistics I
4 credits, Fall/Winter/Spring/Summer
This course introduces students to descriptive statistics, observational studies, experiments, elementary probability, random variables, and sampling distributions. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-105 or MTH-111 with a C or better or placement in MTH-112.

MTH-244 Statistics II
4 credits, Fall/Winter/Spring/Summer
The tools learned in Statistics I are used for hypothesis tests and confidence intervals for one and two populations, linear regression, inference about regression, and chi-square tests. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-243 with a C or better.
MTH-251 Calculus I
5 credits, Fall/Winter/Spring/Summer
This course is the first in a four-term sequence of differentiation. This course is the first in a four-term sequence designed for students in science, engineering, or mathematics. Required: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-112 with a C or better or placement in MTH-251.

MTH-252 Calculus II
5 credits, Winter/Spring
This course is the second in a four-term calculus sequence designed for students in science, engineering, or mathematics. It will focus on the work of integration. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-251 with a C or better.

MTH-253 Calculus III
5 credits, not offered every term
This course is the third in a four-term calculus sequence. Topics include sequences and series (power, Taylor, Maclaurin), tests of convergence, Taylor polynomials, and multiple integrals using Cartesian, polar, cylindrical, and spherical coordinate systems. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-252 with a C or better.

MTH-254 Vector Calculus
5 credits, not offered every term
This course is an introduction to the study of vectors and analytic geometry in three-space, the calculus of vector-valued functions, and the calculus of several variables. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-252 with a C or better.

MTH-256 Differential Equations
4 credits, not offered every term
An introduction to the study of first-order differential equations, first-order systems of differential equations, linear systems of equations, and applications of these topics. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement WR-121. Prerequisite: Pass MTH-252 with a C or better.

MTH-2526 Linear Algebra
4 credits, not offered every term
This course is an introduction to linear analysis of n-space: systems of linear equations, vectors, matrices, matrix operations, linear transformations, linear independence, span, bases, subspaces, determinants, eigenvalues, eigenvectors, inner products, diagonalization, and applications of these topics. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass MTH-252 with a C or better, or instructor consent.

MTH-280 Mathematics/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. Practical experience in teaching, tutoring or applying mathematics while supervised by a teacher or mathematician. May be repeated for up to 12 credits. Restricted: Math lab tutors.

MUP
Music Performance

MUP-100 Individual Lessons: Non-Music Majors
1 credit, Fall/Winter/Spring/Summer
Private lessons for beginners, non-music majors, and students who receive a low rating in MUP 171-191 auditions. Brass, woodwind, percussion, string and keyboard instruments, and voice. May be repeated for up to 6 credits.

MUP-102 Concert Band
0-2 credits, Fall/Winter/Spring
MUP-105 Jazz Ensemble
3 credits, Fall/Winter/Spring
For non-majors and music majors. Introduction and study of common “big band” and small-group jazz styles. This is the first year of a two-year course of study that includes performance, improvisation, musical arranging and writing, study of common styles and practices of historically and culturally significant jazz artists, and study of historical issues related to the development and performance of jazz music. Provides a thorough groundwork in the fundamental ideas and practices of jazz music and jazz ensemble performance. May be repeated for up to 8 credits. Required: Instructor consent. Demonstrated ability to perform at the appropriate level as determined by the instructor.

MUP-122 Chamber Choir
3 credits, Fall/Winter/Spring
Select vocal ensemble which rehearses and performs choral music from the Renaissance to the 21st century. Provides preparation for entering professional fields of music and performance. Emphasis on a cappella singing applied to appropriate chamber music. Recommended for vocal music majors. By audition. May be repeated for up to 8 credits.

MUP-125 Vocal Jazz Ensemble: Mainstream
3 credits, Fall/Winter/Spring
Performing ensemble that cultivates musical, professional, and personal growth through rehearsal and performance with rhythm section of jazz, rock, pop, funk, and fusion. Includes study of jazz as it applies to vocal ensemble combined with rhythm section. Emphasis on style, improvisation, and techniques. By audition. May be repeated for up to 8 credits. Recommended: MUP-104.
MUP-141 College Orchestra
1 credit, Fall/Winter/Spring
Performance and study of orchestral literature. College students may earn credit for playing in one of several approved orchestral groups. Minimum of one performance per term. May be repeated for up to 8 credits. Required: Instructor consent.

MUP-158 Chamber Ensemble
0-2 credits, Fall/Winter/Spring
Rehearsal and performance of traditional vocal and instrumental chamber music (one musician per part). Includes concerts and coaching by area professionals. Highly recommended for music majors. May be repeated for up to 8 credits. Recommended: MUP-102 or MUP-122.

MUP-171 Individual Lessons: Piano
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-171J Individual Lessons: Jazz Piano
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-174 Individual Lessons: Voice
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-174J Individual Lessons: Jazz Voice
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-175 Individual Lessons: Violin
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-176 Individual Lessons: Viola
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-177 Individual Lessons: Cello
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-178 Individual Lessons: Bass
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-178J Individual Lessons: Jazz Bass
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-179 Individual Lessons: Harp
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-180 Individual Lessons: Guitar
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-180J Individual Lessons: Jazz Guitar
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-181 Individual Lessons: Flute
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-181J Individual Lessons: Jazz Flute
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-182 Individual Lessons: Oboe
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-183 Individual Lessons: Clarinet
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-183J Individual Lessons: Jazz Clarinet
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-184 Individual Lessons: Saxophone
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-184J Individual Lessons: Jazz Saxophone
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.
MUP-185 Individual Lessons: Bassoon
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-186 Individual Lessons: Trumpet
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-186J Individual Lessons: Jazz Trumpet
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-187 Individual Lessons: French Horn
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-188 Individual Lessons: Trombone
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-188J Individual Lessons: Jazz Trombone
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-189 Individual Lessons: Baritone
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-190 Individual Lessons: Tuba
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-191 Individual Lessons: Percussion
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-191J Individual Lessons: Jazz Percussion
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-202 Concert Band
0-2 credits, Fall/Winter/Spring
Performance and study of traditional and contemporary band literature. Emphasis on musical style and basic instrumental techniques as applied to ensemble playing. No audition required. Tuition waivers available. Required: Ability to read music and play a band instrument. May be repeated for up to 8 credits.

MUP-204 Pep Band/Combo-Improv
0-1 credits, Fall/Winter/Summer
Instrumental performing group concentrating on rock, pop, and contemporary styles in the small to medium-sized group setting. No audition required. May be repeated for up to 8 credits. Recommended: MUP-205 or MUP-225.

MUP-212 Chamber Choir
3 credits, Fall/Winter/Spring
Select vocal ensemble which rehearses and performs choral music from the Renaissance to the 21st century. Provides preparation for entering professional fields of music and performance. Emphasis on a cappella singing applied to appropriate chamber music. Recommended for vocal music majors. By audition. May be repeated for up to 8 credits.

MUP-222 Jazz Ensemble: Mainstream
3 credits, Fall/Winter/Spring
Performing ensemble that cultivates musical, professional, and personal growth through rehearsal and performance with rhythm section of jazz, rock, pop, funk, and fusion. Emphasis on style, improvisation, and techniques. By audition. May be repeated for up to 8 credits. Recommended: MUP-204.

MUP-225 Vocal Jazz Ensemble: Mainstream
3 credits, Fall/Winter/Spring
Performing ensemble that cultivates musical, professional, and personal growth through rehearsal and performance with rhythm section of jazz, rock, pop, funk, and fusion. Emphasis on style, improvisation, and techniques. By audition. May be repeated for up to 8 credits. Required: Instructor consent.
MUP-258 Chamber Ensemble
0-2 credits, Fall/Winter/Spring
Rehearsal and performance of traditional vocal and instrumental chamber music (one musician per part). Includes concerts and coaching by area professionals. Highly recommended for music majors. May be repeated for up to 8 credits. Recommended: MUP-202 or MUP-222.

MUP-271 Individual Lessons: Piano
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-271J Individual Lessons: Jazz Piano
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-274 Individual Lessons: Voice
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-274J Individual Lessons: Jazz Voice
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-275 Individual Lessons: Violin
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-276 Individual Lessons: Viola
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-277 Individual Lessons: Cello
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-278 Individual Lessons: Bass
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-278J Individual Lessons: Jazz Bass
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-279 Individual Lessons: Harp
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-280 Individual Lessons: Guitar
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-280J Individual Lessons: Jazz Guitar
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-281 Individual Lessons: Flute
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-281J Individual Lessons: Jazz Flute
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-282 Individual Lessons: Oboe
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-283 Individual Lessons: Clarinet
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-284 Individual Lessons: Saxophone
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-285 Individual Lessons: Bassoon
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-286J Individual Lessons: Jazz Saxophone
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.
MUP-286 Individual Lessons: Trumpet
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-286J Individual Lessons: Jazz Trumpet
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-287 Individual Lessons: French Horn
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-288 Individual Lessons: Trombone
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-288J Individual Lessons: Jazz Trombone
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUP-289 Individual Lessons: Baritone
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-290 Individual Lessons: Tuba
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-291 Individual Lessons: Percussion
1 credit, Fall/Winter/Spring/Summer
College level private lessons required for music majors and available to qualified nonmajors. End-of-term juried performance mandatory. Corequisite: MUS-189. May be repeated for up to 6 credits.

MUP-291J Individual Lessons: Jazz Percussion
1 credit, Fall/Winter/Spring/Summer
College level private lessons available to music majors and qualified nonmajors. End-of-term juried performance mandatory. May be repeated for up to 6 credits.

MUS-101 Music Fundamentals
3 credits, Fall/Winter/Spring
Introduction to fundamentals of reading and writing music. Designed for nonmusic majors or majors needing substantial preparation for Music Theory I.

MUS-102 Music Fundamentals
3 credits, Winter
Introduction to fundamentals of reading and writing music. Designed for nonmusic majors or majors needing substantial preparation for Music Theory I.

MUS-103 Music Fundamentals
3 credits, Spring
Introduction to fundamentals of reading and writing music. Designed for nonmusic majors or majors needing substantial preparation for Music Theory I.

MUS-105 Music Appreciation
3 credits, Fall/Winter/Spring/Summer
For non-majors and music majors. Emphasis on engaging in the study of instrumental and vocal musical genres from the ancient period through the contemporary music of our time. Includes critical analysis, study of elements, forms, styles, composers, performers, cultural, and historical issues and events. Recommended: Pass RD-090 or placement in RD-115, and pass WR-095 or placement in WR-121.

MUS-106 Audio Recording at Home
1 credit, Fall/Winter/Spring/Summer
An overview of the basic tools and techniques used in audio recording at home. Get help with your home recording equipment. Depending on participant needs, topics may include signal path, microphone applications, software, hardware, outboard gear, soldering techniques, tracking, mixing, and editing.

MUS-107 Introduction to Audio Recording I
3 credits, Fall/Winter/Spring
Introduction to the basic techniques and tools used in audio recording. Areas of study include signal path, microphone applications, software, hardware, outboard gear, soldering techniques, tracking, mixing, and editing. Software/hardware includes ProTools, ADAT, Mackie, etc. Prerequisite: Pass MUS-107.

MUS-108 Introduction to Audio Recording II
3 credits, Fall/Winter/Spring
Exploration of techniques and tools used in audio recording. Analog, digital, and hard drive recording will be explored. Areas of study include multi-tracking, signal path, microphone applications, software, hardware, outboard gear, soldering techniques, tracking, mixing, and editing. Software/hardware includes ProTools, ADAT, Mackie, etc. Prerequisite: Pass MUS-107 and MUS-108.
MUS-111 Music Theory I
3 credits, Fall
For non-majors and music majors. Presents the diatonic material and structure of tonal music in theory and practice through written exercises, compositions, listening, and analysis. This is the first term of a three-term sequence that includes concepts of pitch and rhythm, intervals, two voice composition, triads, notation, scoring, and Renaissance practices. Provides a thorough groundwork in the melodic, harmonic, and rhythmic elements of music. Includes study of the practices and styles of Bach, Haydn, Mozart, Beethoven, and other 17th and 18th century composers. Required: Ability to read music. This course required for music majors. Prerequisite: Pass the Music Theory Placement/Entrance Test. Recommended: Pass MTH-095 or placement in MTH-111; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

MUS-111L MIDI Lab I
1 credit, Fall
Introduces students to Finale (music notation software) on Macintosh computers. Required for first-year music majors.

MUS-112 Music Theory I
3 credits, Winter
For non-majors and music majors. Presents the diatonic material and structure of tonal music in theory and practice through written exercises, compositions, listening, and analysis. This is the second term of a three-term sequence that includes tonic/dominant voice leading phrase models, embellishing tones, chorale harmonization, figured bass and Renaissance and Baroque Practices. Provides a thorough groundwork in the melodic, harmonic, and rhythmic elements of music. Includes study of the practices and styles of Bach, Haydn, Mozart, Beethoven, and other 17th and 18th century composers. Required: Ability to read music. This course is required for music majors. Prerequisite: Pass the Music Theory Placement/Entrance Test. Recommended: Pass MTH-095 or placement in MTH-111; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass MUS-111 and MUS-111L.

MUS-112L MIDI Lab I
1 credit, Winter
Introduces students to Finale (music notation software) on Macintosh computers. Required for first-year music majors.

MUS-113 Music Theory I
3 credits, Spring
For non-majors and music majors. Presents the diatonic material and structure of tonal music in theory and practice through written exercises, compositions, listening, and analysis. This is the third term of a three-term sequence that includes leading tone and six-four chords, interaction of melody and harmony, diatonic sequences, secondary dominants and leading tone chords, phrase rhythm and motivic analysis, and Renaissance and Baroque Practices. Provides a thorough groundwork in the melodic, harmonic, and rhythmic elements of music. Includes study of the practices and styles of Bach, Haydn, Mozart, Beethoven, and other 17th and 18th century composers. Required: Ability to read music. This course is required for music majors. Prerequisite: Pass the Music Theory Placement/Entrance Test. Recommended: Pass MTH-095 or placement in MTH-111; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass MUS-112 and MUS-112L.

MUS-113L MIDI Lab I
1 credit, Spring
Introduces students to Finale (music notation software) on Macintosh computers. Required for first-year music majors.

MUS-114 Aural Skills I
2 credits, Fall
Diatonic sight singing in major keys using solfeggio syllables and moveable “do.” Melodic dictation and aural recognition of intervals and triads. Required for first-year music majors.

MUS-115 Aural Skills I
2 credits, Winter
Diatonic sight singing in major keys using solfeggio syllables and moveable “do.” Melodic dictation and aural recognition of intervals, triads, and 7th chords. Required for first-year music majors. Prerequisite: Pass MUS-114.

MUS-116 Aural Skills I
2 credits, Spring

MUS-117 Sight-Reading
1 credit, Fall/Winter/Spring
Learning to read and sing music by sight. Students will spend time practicing sight-reading, starting with easy exercises and moving to more difficult exercises as the term progresses.

MUS-127 Keyboard Skills I
2 credits, Fall
Develops basic keyboard skills. Studies keyboard applications of the materials of tonal music. Required for music majors. Prerequisite: Pass MUS-128.

MUS-129 Keyboard Skills I
2 credits, Winter
Develops basic keyboard skills. Studies keyboard applications of the materials of tonal music. Required for music majors. Prerequisite: Pass MUS-128.

MUS-130 Music & Media: Sex, Drugs, Rock & Roll
1 credit, Fall/Winter/Spring
Explores the relationship of music to economic, political, cultural and artistic subjects. Examines how music serves and is served by pop culture and media.

MUS-131 Group Piano: Piano for Pleasure
1 credit, Fall
Beginning classroom piano instruction for non-music majors. Includes reading, theory, technique, exercises, and the opportunity to share your music with others. All levels welcome, beginners through advanced.
MUS-132 Group Piano: Piano for Pleasure
1 credit, Winter
Beginning classroom piano instruction for non-music majors. Includes reading, theory, technique, exercises, and the opportunity to share your music with others. All levels welcome, beginners through advanced.

MUS-133 Group Piano: Piano for Pleasure
1 credit, Spring
Beginning classroom piano instruction for non-music majors. Includes reading, theory, technique, exercises, and the opportunity to share your music with others. All levels welcome, beginners through advanced.

MUS-134 Group Voice: Anyone Can Sing
1 credit, Fall
Basic vocal techniques for the solo and ensemble singer. For music and non-music majors, voice and music education majors, and/or students who received low rating on MUP-174 audition.

MUS-135 Group Voice: Anyone Can Sing
1 credit, Winter
Basic vocal techniques for the solo and ensemble singer. For music and non-music majors, voice and music education majors, and/or students who received low rating on MUP-174 audition.

MUS-136 Group Guitar I: Guitar for Dummies
1 credit, Fall/Winter/Spring
For beginning to advanced players. Covers finger picking, lead guitar, rock and popular styles, music reading, and music theory. Students provide their own instrument.

MUS-138 Group Guitar II
1 credit, Winter
For intermediate to advanced players. Covers finger picking, lead guitar, rock and popular styles, music reading, and music theory. Students provide their own instrument.

MUS-140 Careers in Music
3 credits, Fall
An overview of the music industry career opportunities. Studies include recording studio management/engineering, music merchandising, promotion, music contracting, agent/personal manager, live performing, technical support, record business, video and film production/editing, retailing, and instrument repair. Required course for the Music Technology certificate.

MUS-141 Introduction to the Music Business
3 credits, Winter
Explores business basics, songwriting, demos, agents, managers, copyrights, gig and concert promotion, publishing, licensing, and music business structures.

MUS-142 Introduction To Electronic Music I: MIDI
3 credits, Fall/Winter/Spring
Introduction to synthesis, MIDI sequencing, basic musical elements, and the basics of production. Learn how to make beats, loops, etc. Uses common production software/hardware. Prerequisites: Pass MUS-143.

MUS-143 Introduction To Electronic Music II: Sequencing & Sampling
3 credits, Fall/Winter/Spring
An introduction to digital audio in the MIDI environment. Course continues MIDI sequencing and integrates audio into the MIDI environment. Uses common production software/hardware. Prerequisite: Pass MUS-142.

MUS-144 Introduction To Electronic Music III: Digital Audio
3 credits, Fall/Winter/Spring
Exploration of digital sound recording and editing, synthesis, sampling, and sequencing. Presents CD production techniques integrating digital audio with the MIDI sequence. Uses Pro Tools, and other common production software/hardware. Prerequisites: Pass MUS-143.

MUS-145 Introduction to Digital Sound, Video & Animation
3 credits, not offered every term
An introduction to new media. Includes sound, video, animation, mp3, DVD, and compression technology.

MUS-147 Music, Sound & Moviemaking
1 credit, Fall/Winter/Spring
Introduction to music and sound as related to moviemaking. Students will have the opportunity to create and assemble music, sound, and video into a finished product.

MUS-148 Live Sound Engineering
3 credits, not offered every year
Introduction to the basic techniques and tools used in live sound engineering and mixing. Areas of study include set up, signal path, microphone applications, hardware, and outboard gear.

MUS-189 Performance & Repertoire
1 credit, Fall/Winter/Spring
A performance forum required for all students studying privately non-jazz sections at the MUP 171-191 and MUP 271-291 levels. Each student must perform as a soloist on his/her major instrument at least once a term and must be present for performances of classmates. Performers will be critiqued by the instructor. Students will be required to attend approved concerts.

MUS-205 Music Literature: History of Jazz
4 credits, not offered every term
For non-majors and music majors. Emphasis on engaging in the study of Jazz music and surrounding cultural/historical issues. Includes critical analysis, study of elements, forms, styles, composers, performers, cultural, and historical issues and events. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.
MUS-206 Music Literature: History of Rock
4 credits, Fall/Winter/Spring/Summer
For non-majors and music majors. Emphasis on engaging in the study of Rock music and surrounding cultural/historical issues. Includes critical analysis, study of elements, forms, styles, composers, performers, cultural, and historical issues and events. An examination of Rock music as a contemporary social medium. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

MUS-211 Music Theory II
3 credits, Fall
For non-majors and music majors. Continuation of the study of harmony and of the material and structure of tonal music in theory and practice through written exercises, compositions, listening, and analysis. This is the first term of a three-term sequence that includes study of species counterpoint, melodic and rhythmic embellishment, notation and scoring, phrase model review, chord voicing in multiple parts, embellishing tones, and chorale harmonization. Also includes study of harmonic counterpoint and composition in small forms in various 18th, 19th, and 20th century idioms. Required: Ability to read music. This course is required for music majors. Prerequisite: Pass MUS-113 and MUS-113L.

MUS-211L MIDI Lab II
1 credit, Fall
Advanced use of Finale (music notation software). Required for second-year music majors. Prerequisite: Pass MUS-113L.

MUS-212 Music Theory II
3 credits, Winter
For non-majors and music majors. Continuation of the study of harmony and of the material and structure of tonal music in theory and practice through written exercises, compositions, listening, and analysis. This is the second term of a three-term sequence that includes the study of cadences, diatonic sequence, secondary dominants, tonicizing, modulation, and binary and ternary forms. Also includes study of harmonic counterpoint and composition in small forms in various 18th, 19th, and 20th century idioms. Required: Ability to read music. This course is required for music majors. Prerequisites: Pass MUS-211 and MUS-211L.

MUS-212L MIDI Lab II
1 credit, Winter
Advanced use of Finale (music notation software). Required for second-year music majors. Prerequisite: Pass MUS-211L.

MUS-213 Music Theory II
3 credits, Spring
For non-majors and music majors. Continuation of the study of harmony and of the material and structure of tonal music in theory and practice through written exercises, compositions, listening, and analysis. This is the third term of a three-term sequence that includes study of modal mixture-color and drama in composition, neapolitan and augmented sixths, popular song and art song, rondo and variation, sonata form and chromaticism. Also includes study of harmonic counterpoint and composition in small forms in various 18th, 19th, and 20th century idioms. Required: Ability to read music. This course is required for music majors. Prerequisites: Pass MUS-212 & pass MUS-212L.

MUS-213L MIDI Lab II
1 credit, Spring
Advanced use of Finale (music notation software). Required for second-year music majors. Prerequisite: Pass MUS-212L.

MUS-214 Keyboard Skills II
2 credits, Fall
Advanced keyboard applications of the materials of diatonic and chromatic music. Required for second-year music majors. Prerequisite: Pass MUS-129.

MUS-215 Keyboard Skills II
2 credits, Winter

MUS-216 Keyboard Skills II
2 credits, Spring

MUS-224 Aural Skills II
2 credits, Fall
Diatonic and chromatic sight singing with sol feú syllables and moveable "do." Four-part dictation including all chromatic devices studied in Theory II. Required for second-year music majors. Prerequisite: Pass MUS-116.

MUS-225 Aural Skills II
2 credits, Winter
Diatonic and chromatic sight singing with sol feú syllables and moveable "do." Four-part dictation including all chromatic devices studied in Theory II. Required for second-year music majors. Prerequisite: Pass MUS-214.

MUS-226 Aural Skills II
2 credits, Spring
Diatonic and chromatic sight singing with sol feú syllables and moveable "do." Four-part dictation including all chromatic devices studied in Theory II. Required for second-year music majors. Prerequisite: Pass MUS-225.

MUS-230 Music & Media: Sex, Drugs, Rock & Roll
4 credits, Fall/Winter/Spring
Explores history and development of the pop music, pop culture and media industries in America.
MUS-247 Music, Sound & Moviemaking
3 credits, Fall/Spring
Introduction to music and sound as related to moviemaking. Students will have the opportunity to create and assemble music and sound for video into a finished product. Explores the basic components of music and sound as they relate to commercial film/video production.

MUS-280 Music/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. Provides students with on-the-job work experience in the field of music. Required: Instructor consent & a CWE seminar. Prerequisites: Pass MUS-107, MUS-140 and MUS-142.

NRS

Nursing

NRS-110 Foundations of Nursing - Health Promotion
5 credits, Fall
Introduces the learner to framework of the Oregon Consortium of Nursing Education (OCNE) curriculum. The emphasis is on health promotion across the life span including learning about self-health and client health practices. To support self and client health practices, students learn to access research evidence about health lifestyle patterns and risk factors for disease/illness, apply growth and development theory, interview clients in a culturally sensitive manner, work as members of a multidisciplinary team giving and receiving feedback about performance, and use reflective thinking about their practice as nursing students. Populations studied in the course include children, adults, older adults and the family experiencing a normal pregnancy. Includes classroom and clinical learning experiences. Prerequisite: Admission into the CCC Nursing Program.

NRS-110C Foundations of Nursing - Health Promotion Clinical
4 credits, Fall
Clinical application of NRS-110 content.

NRS-111 Foundations of Nursing - Chronic Illness I Clinical
2 credits, Winter
Introduces assessment and common interventions (including technical procedures) for clients with chronic illnesses common across the life span in major ethnic groups within Oregon. The client's and family's "lived experience" of the condition is explored. Clinical practice guidelines and research evidence are used to guide clinical judgments in care of individuals with chronic conditions. Multidisciplinary team roles and responsibilities are considered in the context of delivering safe, high quality health care to individuals with chronic conditions (includes practical and legal aspects of delegation). Cultural, ethical, legal and health care delivery issues are explored through case scenarios and clinical practice. Case exemplars include children with asthma, adolescents with a mood disorder, adults with type 2 diabetes, and older adults with dementia. Includes classroom and clinical learning experiences. Prerequisite: NRS-110. Corequisites: NRS-230 and NRS-232.

NRS-111C Foundations of Nursing in Chronic Illness I Clinical
4 credits, Winter
Clinical application of NRS-111 content. Restricted: Admitted CCC Nursing students only.

NRS-112 Foundations of Nursing in Acute Care I Clinical
2 credits, Spring
Introduces the learner to assessment and common interventions (including relevant technical procedures) for care of patients across the lifespan that requires acute care, including natural childbirth. Disease/illness trajectories and their translation into clinical practice guidelines and/or standard procedures are considered in relation to their impact on providing culturally sensitive, client-centered care. Includes classroom and clinical learning experiences. Prerequisite: NRS-111. Corequisites: NRS-231 and NRS-233.

NRS-112C Foundations of Nursing in Acute Care I Clinical
4 credits, Spring
Clinical application of NRS-112 content. Restricted: Admitted CCC Nursing students only.

NRS-221 Chronic Illness II & End of Life Clinical
3 credits, Winter
Builds on NRS-111 and expands the student's knowledge related to family care giving, symptom management and end-of-life concepts. These concepts are a major focus and basis for nursing interventions with patients and families. Ethical issues related to advocacy, self-determination, and autonomy are explored. Complex skills associated with the assessment and management of concurrent illnesses and conditions are developed within the context of client and family preferences and needs. Skills related to enhancing communication and collaboration as a member of an interdisciplinary team are further explored. Exemplars include patients with chronic mental illness and addictions as well as other chronic conditions and disabilities affecting functional status and family relationships. Includes classroom and clinical learning experiences. Prerequisite: NRS-222, NRS-231, NRS-233.

NRS-221C Chronic Illness II & End of Life Clinical
6 credits, Winter
Clinical application of NRS-221 content. Restricted: Admitted CCC Nursing students only.
NRS-222 Nursing in Acute Care II & End of Life  
3 credits, Fall  
Builds on NRS-112 and focuses on more complex and/or unstable patient care conditions, some of which may result in death. These patient care conditions require strong noticing and rapid decision-making skills. Evidence base is used to support appropriate focused assessments, and effective, efficient nursing interventions. Life span and developmental factors, cultural variables, and legal aspects of care frame the ethical decision-making employed in patient choices for treatment or palliative care within the acute care setting. Case scenarios incorporate prioritizing care needs, delegation and supervision, and family and patient teaching for either discharge planning or end-of-life care. Exemplars include acute conditions affecting multiple body systems. Includes classroom and clinical learning experiences. Prerequisites: NRS-112, NRS-231, NRS-233.

NRS-222C Nursing in Acute Care II & End of Life Clinical  
6 credits, Fall  
Clinical application of NRS-222 content. Restricted: Admitted CCC Nursing students only.

NRS-224 Integrative Practicum  
2 credits, Spring  
Designed to formalize the clinical judgments, knowledge and skills necessary in safe, registered nurse practice. Faculty/ Clinical Teaching Associate/Student Triad Model provides a context that allows the student to experience the nursing work world in a selected setting, balancing demands of the job and lifelong learner. Analysis and reflection throughout the clinical experience provide the student with evaluative criteria against which they can judge their own performance and develop a practice framework. Includes seminar, self-directed study and clinical experience. Prerequisite: NRS-221.

NRS-224C Integrative Practicum Clinical  
7 credits, Spring  
Clinical application of NRS-224 content. Restricted: Admitted CCC Nursing students only.

NRS-230 Clinical Pharmacology I  
3 credits, Winter  
Introduces the theoretical background that enables students to provide safe and effective care related to drugs and natural products to persons throughout the lifespan. It includes the foundational concepts of principles of pharmacology, nonopioid analgesics, and antibiotics, as well as additional classes of drugs. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of information, understanding of pharmacokinetics and pharmacodynamics, developmental physiologic considerations, monitoring and evaluating the effectiveness of drug therapy, teaching persons from diverse populations regarding safe and effective use of drugs and natural products, intervening to increase therapeutic benefits and reduce potential negative side effects, and communicating appropriately with other health professionals regarding drug therapy. Drugs are studied by therapeutic or pharmacological class using an organized framework. Prerequisites: BI-230, BI-231, BI-232, BI-233, BI-234.

NRS-231 Clinical Pharmacology II  
3 credits, Spring  
This sequel to NRS-230 continues to provide the theoretical background that enables students to provide safe and effective care related to drugs and natural products to persons throughout the lifespan. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of information, monitoring and evaluating the effectiveness of drug therapy, teaching persons from diverse populations regarding safe and effective use of drug and natural products, intervening to increase therapeutic benefits and reduce potential negative effects, and communicating appropriately with other health professionals regarding drug therapy. Addresses additional classes of drugs and related natural products not contained NRS-230. Prerequisites: BI-230, BI-231, BI-232, BI-233, BI-234.

NRS-232 Pathophysiological Processes I  
3 credits, Winter  
Introduces pathophysiological processes that contribute to many different disease states across the lifespan and human responses to those processes. It includes the foundational concepts of cellular adaption, injury, and death; inflammation and tissue healing; fluid and electrolyte imbalances; and physiologic response to stressors, as well as additional pathophysiological processes. Students will learn to make selective clinical decisions in the context of nursing regarding using current, reliable sources of pathophysiology information, selecting and interpreting focused nursing assessments based on knowledge of pathophysiological processes, teaching persons from diverse populations regarding pathophysiological processes, and communicating with other health professionals regarding pathophysiological processes. Prerequisites: BI-230, BI-231, BI-232, BI-233, BI-234.

NRS-233 Pathophysiological Processes II  
3 credits, Spring  
This sequel to NRS-232 continues to explore additional pathophysiological processes that contribute to disease states across the lifespan and human responses to those processes. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of pathophysiological processes, teaching persons from diverse populations regarding pathophysiological processes, and communicating with other health professionals regarding pathophysiological processes. Addresses additional pathophysiological processes not contained in NRS-232. Prerequisite: NRS-232.
NUR
Courses with this prefix may not transfer to a four-year institution unless applied as part of the 12 allowable career technical credits for the AAOT or ASOT-Business.

Nursing Assistant

**NUR-100 Nursing Assistant I**
7 credits, Fall/Winter/Spring/Summer
Prepares the student to perform routine nursing assistant tasks to clients in sub-acute care settings as well as in the community. Includes 75 hours of didactic and skills lab instruction. May not be challenged.

**NUR-100C Nursing Assistant I Clinical**
0 credit, Fall/Winter/Spring/Summer
Prepares the student to perform routine nursing assistant tasks to clients in hospitals, long-term and skilled care facilities, as well as in the community. Includes 75 hours of clinical practicum. May not be challenged.

**NUR-101 Certified Nursing Assistant 2-Acute**
3 credits, Fall/Winter/Spring/Summer
Prepares the student to perform routine nursing assistant tasks that are needed in the acute care setting. Includes 64 hours of didactic and skills lab instruction. May not be challenged.

**NUR-101C Certified Nursing Assistant 2-Acute Clinical**
0 credit, Winter/Summer
Prepares the student to perform routine nursing assistant tasks to clients in the acute care setting. Includes 24 hours of clinical practicum. May not be challenged.

**NUR-160 Fluid and Electrolytes**
2 credits, not offered every term
Focus of this course is to assist students in the understanding of fluid, electrolytes, acid-base balances and the interpretation of various diagnostic tests related to the client's clinical condition. Limited to healthcare professionals/healthcare students. Prerequisite: Pass BI-233.

**NUR-217 EKG Interpretation**
1 credit, not offered every term
Course focuses on developing skills in arrhythmia recognition and interpretation. Overview of cardiac A & P and electrophysiology. Recommended for graduating nurses or practicing registered nurses who desire to increase their knowledge in EKG analysis.

OCT
Courses with this prefix may not transfer to a four-year institution.

**Occupational Skills Training/CWE**

**OST-180 Occupational Skills Training/CWE**
1-12 credits
Fall/Winter/Spring/Summer
Provides students hands-on training in a specific occupational area. The class and program are designed for students who need work-based training and classroom instruction to be competitively employable.

PE

**Physical Education**

**PE-185 Physical Education**
1 credit, Fall/Winter/Spring/Summer
Activities may include aikido, aerobic dance, ballet, basketball, conditioning, cross training, golf, karate, racquetball, rock climbing, self-defense, soccer, softball, swimming, swing dance, tai chi, tennis, volleyball, weight training, yoga, and zumba. Current physical examination before enrolling in a physical education course is recommended.

**PE-240 Strength & Conditioning Theory and Techniques**
3 credits, not offered every spring
Designed to provide students the knowledge to design and implement physical training programs and exercises for participants. The curriculum will also help students pass various personal training certification tests. Introductory exercise physiology, biomechanics, program design, and exercise technique are covered.

**PE-260 Care & Prevention of Athletic Injuries**
2 credits, Winter
Care and prevention of athletic injuries. Taping techniques and rehabilitation methods of injury will be discussed and practiced.

**PE-270 Sport & Exercise Psychology**
3 credits, Fall/Winter/Spring
Provides students the basic understanding and knowledge of psychological skills used to improve physical performance in themselves and/or their peers/teammates.

**PE-280 Physical Education/CWE**
2-6 credits
Fall/Winter/Spring/Summer
Cooperative work experience. Provides students with on the job experience and training related to the Physical Education field. Covers job problems and procedures, evaluation of student's job performance by qualified college staff and site supervision. Required: Instructor consent & a CWE seminar.

**PE-294A Philosophy of Coaching**
2 credits, Fall/Winter/Spring
Designed to enhance the leadership, teaching, and management skills of coaches as they relate to interaction with athletes at all levels. Group discussions and seminar sessions relating to coaching philosophies, ethics, practice planning, motivation, and dealing with parents, peers and assistants.

PH

**Physics**

**PH-121 General Astronomy**
4 credits, Fall/Winter/Spring
A lab course discussing the history of astronomy, the Earth and moon, all planets in our solar system, along with asteroids, meteors, and comets. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121; pass MTH-095 with a C or better or placement in MTH-105 or MTH-111.

**PH-122 General Astronomy**
4 credits, Winter/Spring
A lab course discussing the properties of our sun and other stars, and stellar evolution. Prerequisite: Pass PH-121 or GS-107.
PH-123 General Astronomy
4 credits, Spring
A lab course discussing star clusters, the properties of our own galaxy, the other galaxies and cosmology. Prerequisite: Pass PH-122.

PH-201 General Physics
5 credits, Fall
A lab course covering vectors, motion, kinematics, forces and Newton's laws, gravity, conservation laws for momentum and energy, rotational motion, and oscillations. Prerequisite: Pass MTH-251 with a C or better or placement in MTH-252; pass RD-115 with a C or better; pass WR-095 or placement in WR-121.

PH-202 General Physics
5 credits, Winter
A lab course covering electricity, magnetism, DC and AC circuits, and electromagnetic radiation. Prerequisite: Pass PH-201.

PH-203 General Physics
5 credits, Spring
A lab course covering thermodynamics, fluids, waves, geometrical optics, wave optics, and modern physics. Prerequisite: Pass PH-201.

PH-211 General Physics With Calculus
5 credits, Fall
A lab course covering vectors, motion, kinematics, forces and Newton's laws, gravity, conservation laws for momentum and energy, rotational motion, and oscillations. Prerequisites: Pass MTH-251 with a C or better or placement in MTH-252; pass RD-115 with a C or better; pass WR-095 or placement in WR-121.

PH-212 General Physics With Calculus
5 credits, Winter
A lab course covering electricity, magnetism, DC and AC circuits, and electromagnetic radiation. Prerequisites: Pass PH-211 and MTH-252.

PH-213 General Physics With Calculus
5 credits, Spring
A lab course covering thermodynamics, fluids, waves, geometrical optics, wave optics, and modern physics. Prerequisites: Pass PH-212 and MTH-252.

PHL
Philosophy

PHL-101 Philosophical Problems
4 credits, Fall/Winter/Spring/Summer
Presents a variety of topics that may include: the nature of reality; knowledge and doubt; the human condition; truth; and the search for meaning. Recommended: Pass RD-090 or placement in RD-115.

PHL-102 Ethics
4 credits, Fall/Winter/Spring
Introduces the study of morality: e.g., right and wrong, free will and determinism, morals and society. Recommended: Pass RD-090 or placement in RD-115.

PHL-103 Critical Reasoning
4 credits, Fall/Winter/Spring

PHL-205 Moral Issues
4 credits, not offered every term
Philosophical examination of selected moral issues such as the environment, biomedical ethics, human experimentation, professional ethics, privacy and war. Recommended: Pass RD-090 or placement in RD-115.

PHL-210 Philosophy of Religion
4 credits, not offered every term
Introduces philosophic basis of religious thought in world culture. Explores different points of view. Recommended: Pass RD-090 or placement in RD-115.

PHL-213 Asian Philosophy
4 credits, not offered every term

PHL-215 History of Western Philosophy
4 credits, not offered every term
Overview course examines the roots and development of Western thought including ancient, medieval, modern and contemporary philosophy. Covers concepts of existence, knowledge, truth and morality. Recommended: Pass RD-090 or placement in RD-115.

PIE
Program for Intensive English

PIE-011 PIE Tutoring
0 credit, Fall/Winter/Spring/Summer
Designed for the Program for Intensive English students who need one-on-one instruction in conversation, pronunciation, reading, grammar, writing, or GED preparation. The students meet with a tutor or instructor and work on the above skill areas. Required: Instructor consent.

PIE-014 Introduction to Business English A
3 credits, not offered every term
Part A of a two-part series of classes designed for non-native speakers of English who are considering employment and/or training in a business field. The course teaches students the basic communication skills frequently required in everyday business interactions both in the U.S. and internationally. Required: Instructor consent.

PIE-015 Introduction to Business English B
3 credits, not offered every term
Part B of a two-part series of classes designed for non-native speakers of English who are considering employment and/or training in a business field. The course teaches students the basic communication skills frequently required in everyday business interactions both in the U.S. and internationally. Required: Instructor consent.
PIE-022 Beginning ESL
3 credits, Fall/Winter/Spring/Summer
Introduces the language necessary to function in day-to-day American society at the beginning level; listening, speaking, reading, and writing in the contexts of work, family, and community. Required: Instructor consent.

PIE-033 Intermediate Conversation
3 credits, Fall/Winter/Spring/Summer
Intermediate-level students study and practice speaking and listening to improve their fluency in English for living and working situations. Required: Instructor consent.

PIE-034 Upper Intermediate Conversation
3 credits, not offered every term
For upper-intermediate non-native speakers of English who want to study and practice speaking and listening to improve their fluency in English. Emphasis will be on developing conversational skills as needed for success in meeting personal, educational, family, and workplace goals. Required: Instructor consent.

PIE-040 Beginning Grammar
0 credit, Fall/Winter/Spring/Summer
Presentation and practice simple present tense of the verb "to be," nouns, descriptive/possessive adjectives, prepositions of place and time, and simple sentence structures in written and spoken English. Required: Instructor consent.

PIE-041 Upper Beginning Grammar
0 credit, Fall/Winter/Spring/Summer
Part A of a two-part series. Present and practice present perfect with time expressions and adverbs of frequency, modal of ability, permission and advice, and comparative and superlative adjectives in written and spoken English. Required: Instructor consent.

PIE-042 Intermediate Grammar A
3 credits, not offered every term
Part B of a two-part series. Present and practice present perfect with time expressions and adverbs of frequency, modal of ability, permission and advice, and comparative and superlative adjectives in written and spoken English. Required: Instructor consent.

PIE-043 Intermediate Grammar B
3 credits, not offered every term
Part B of a two-part series. Present and practice present perfect with time expressions and adverbs of frequency, modal of ability, permission and advice, and comparative and superlative adjectives in written and spoken English. Required: Instructor consent.

PIE-044 Upper Intermediate Grammar A
3 credits, not offered every term
Part A of a two-part series of classes designed to help upper-intermediate non-native speaker of English gain knowledge and proficiency in the use of verb forms that frequently occur together, gerunds, infinitives, and causative verbs. Required: Instructor consent.

PIE-045 Upper Intermediate Grammar B
3 credits, not offered every term

PIE-049 Beginning Reading and Writing
0 credit, not offered every term
Designed to teach beginning-level students who have limited knowledge of written English. Students will practice alphabet recognition, read and write short sentences, study new vocabulary, read short paragraphs, and gain reading and scanning skills to use in everyday life and in the workplace. Required: Instructor consent.

PIE-050 Upper Beginning Reading and Writing
0 credit, Fall/Winter/Spring/Summer
Designed for the upper-beginning level student who reads and writes at the sentence level. Students will read short texts in order to improve reading skills. Students will write a variety of sentences and put related sentences in paragraph form. Required: Instructor consent.

PIE-051 Upper Beginning Reading
0 credit, not offered every term
Designed for students who read at the sentence level. Students will read short texts in order to improve reading skills. Required: Instructor consent.

PIE-053 Intermediate Reading/Writing
6 credits, Fall/Winter/Spring/Summer
Designed for the intermediate-level student who is ready to begin writing at the paragraph level. The major purpose of the course is to improve the student's reading and writing skills as needed for more advanced ESL and college courses, in the workplace, and in everyday life. Required: Instructor consent.

PIE-054 Upper Intermediate Reading/Writing
6 credits, Fall/Winter/Spring/Summer
Upper-intermediate students will practice reading and writing skills needed to succeed in college, the workplace, and everyday life. Introduction to multiple paragraph essays. Required: Instructor consent.

PIE-060 Pronunciation A
3 credits, not offered every term
For intermediate and higher-level students who want to sound more natural when speaking English. Focuses on increasing awareness of the sounds of American English, improving intelligibility, and producing speech more fluently. Required: Instructor consent.

PIE-063 Idioms & Conversation A
3 credits, not offered every term
Part A of a two-part that introduces common American idioms while practicing conversation skills at the upper-intermediate level. Required: Instructor consent.

PIE-064 Idioms & Conversation B
3 credits, not offered every term
Part B of a two-part series of classes that introduces common American idioms while practicing conversation skills at the upper intermediate level. Required: Instructor consent.
PIE-067 Video and Conversation
3 credits, not offered every year
Intensifies intermediate/advanced language skills in listening and speaking.
Students view Crossroads Café video series, complete workbook exercises, practice listening for specific information, participate in pair, small group, and whole class discussions and activities. Required: Instructor consent.

PIE-070 Computer Lab
0 credit, Fall/Winter/Spring/Summer
Provides opportunities to improve English language skills by using language learning software and Internet websites. Required: Instructor consent.

PIE-080 TOEFL/TOEIC Preparation
0 credit, not offered every term
Prepares students for the Test of English as a Foreign Language (TOEFL) and the Test of English for International Communication (TOEIC) by improving listening, grammar, reading and writing skills. It includes familiarization with test components, test-taking techniques, strategies and computer skills. Required: Instructor consent.

PIE-082 Spelling
3 credits, not offered every term
Course will present and provide opportunities to practice English spelling patterns and rules and individualize instruction to address spelling challenges. Required: Instructor consent.

PIE-083 Vocabulary Building A
3 credits, not offered every term
Part A of a two-part series of classes in which upper-intermediate and advanced-level students will develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and from the Academic Word List, and will develop their vocabulary acquisition skills. Required: Instructor consent.

PIE-084 Vocabulary Building B
3 credit, not offered every year
Part B of a two-part series of classes in which upper-intermediate and advanced-level students will develop their passive and active vocabularies through numerous exposures to selected words from the General Service List and from the Academic Word List, and will develop their vocabulary acquisition skills. Required: Instructor consent.

PIE-085 Editing A
3 credits, not offered every term
Upper-intermediate and higher-level students will improve their writing through editing. Required: Instructor consent.

PIE-087 Editing for Better Writing
6 credits, Fall/Winter/Spring/Summer
Upper-intermediate and higher-level students will improve their writing through editing. They will also engage in extended reading to provide a context for writing. Required: Instructor consent.

PIE-090 The Clackamas Experience
0 credit, Fall/Winter/Spring/Summer
Designed for international students entering Clackamas Community College for the first time. Students learn about college policies and procedures, student rights and responsibilities, learning styles, possible programs of study, matriculation procedures, culture shock, and laws affecting students. Required: Instructor consent.

PS Political Science

PS-200 Introduction to Political Science
4 credits, Fall/Winter/Spring
A general introduction to the field of political science. It introduces and expands on basic political concepts and themes, explores political theory and ideology, and considers the dynamics of political institutions and government and how both are integrated into political life. Recommended: Pass RD-090 or placement in RD-115.

PS-201 U.S. Government: National Political Process
4 credits, not offered every term
Focuses on understanding the U.S. Constitution and the Bill of Rights both legally and politically. Moreover, this class examines the Congress, the Presidency and the federal courts. Recommended: Pass RD-090 or placement in RD-115.

4 credits, not offered every term
Examines American political parties, the role of money in politics and American political participation in general. Examines American domestic, economic and foreign policy. Recommended: Pass RD-090 or placement in RD-115.

PS-203 U.S. Government: State & Local Institutions
4 credits, not offered every term
Introduces students to American state and local government, with an emphasis on Oregon politics at the state and local level. Recommended: Pass RD-090 or placement in RD-115.

PS-204 Introduction to Comparative Politics
4 credits, not offered every year
Examines the various ideologies, institutions, and processes that constitute the nation-states that make up the world political system. Recommended: Pass RD-090 or placement in RD-115.

PS-205 International Relations
4 credits, not offered every term
Introduces the study of international relations by examining the institutions that constitute the international system. Special attention will be paid to the conflicts in the Iraq, Afghanistan, and other theatres of combat, as well as diplomacy and terrorism as instruments of foreign policy. Recommended: Pass RD-090 or placement in RD-115.

PS-206 Introduction to Political Theory
4 credits, not offered every term
Introduces the fundamental political question: What is justice? Examines the writings of political philosophers such as Plato, Aristotle, Rousseau, and Locke. Recommended: Pass RD-090 or placement in RD-115.

PS-225 Introduction to Political Ideologies
4 credits, not offered every term
Focuses primarily on the various political ideologies that make up the ideological universe and critically examines such as distinct ideologies as liberalism, conservatism, socialism, libertarianism and fascism. Recommended: Pass RD-090 or placement in RD-115.
PSY-101 Human Relations
3 credits, Fall/Winter/Spring/Summer
Introduction to interpersonal relationships and human relations in a social context. Includes lecture and discussions/activities with an emphasis on student participation designed to provide the opportunity to gain new perspectives in the acceptance and understanding of others, demonstrate diversity skills and greater appreciation for individual differences, learn coping skills for dealing with difficult situations in life, learn strategies for student and career success, foster and increase the ability to communicate effectively in a variety of settings, and gain a greater awareness of self and interaction style. Recommended: Pass RD-090 or placement in RD-115.

PSY-110 Psychology: An Overview
4 credits, not offered every term
A general introduction to the field of psychology. Explores a wide variety of topics. Recommended: Pass RD-090 or placement in RD-115.

PSY-200 Psychology As a Natural Science
4 credits, Fall/Winter/Spring
Introduction to physiological psychology, the study of how the nervous system produces behavior and cognition. Further topics may include consciousness, sleep, memory, emotion and language. Recommended: Pass RD-090 or placement in RD-115.

PSY-205 Psychology As a Social Science
4 credits, Fall/Winter/Spring
Principles of conditioning and social psychology, the study of how groups affect the individual. Further topics may include motivation, personality, development and stress. Recommended: Pass RD-090 or placement in RD-115.

PSY-214 Introduction to Personality
4 credits, not offered every term
Explores the major theoretical approaches toward personality as conceptualized throughout time, from ancient Greece to contemporary research, with the greatest emphasis on theories originating in the 20th century. Recommended: Pass RD-090 or placement in RD-115.

PSY-215 Introduction to Developmental Psychology
4 credits, Fall/Winter/Spring/Summer
Research and theories regarding the development of the individual from conception to death, including physical, social and cognitive changes. Recommended: Pass RD-090 or placement in RD-115.

PSY-219 Introduction to Abnormal Psychology
4 credits, Fall/Winter/Spring
Introduction to abnormal psychology, including disorders and approaches to treatment. Recommended: Pass RD-090 or placement in RD-115.

PSY-221 Introduction to Counseling
4 credits, Fall/Winter/Spring
Provides an overview of the theoretical background for different approaches to counseling. Practical skills development emphasized. Role playing, instructor demonstrations and experiential exercises will be explored. Recommended: Pass RD-090 or placement in RD-115.

PSY-231 Introduction to Human Sexuality
4 credits, Fall/Winter/Spring
Introduction to research and theories of human sexual behavior, including sexual relationships, communication and intimacy, sex roles, the development of gender, social trends regarding sexuality and the biology of sexuality and conception. Recommended: Pass RD-090 or placement in RD-115.

PSY-240 Interpersonal Awareness & Growth
4 credits, Fall/Winter/Spring

PSY-280 Psychology/CWE
2-6 credits, Fall/Winter/Spring
Cooperative work experience. Provides students with on-the-job work experience in the field of psychology. Required: Instructor consent & a CWE seminar.

R-101 Comparative Religions
4 credits, Fall
The nature of myth and story, ancient religions, ideas of God, Judaism and introduction to religious topics. Recommended: Pass RD-090 or placement in RD-115.

R-102 Comparative Religions
4 credits, Winter
Covers written and oral sources, Christianity, Islam, and includes the history and philosophy of other Western religious developments. Recommended: Pass RD-090 or placement in RD-115.

R-103 Comparative Religions
4 credits, Spring
The history, ideas, and philosophy of the Eastern religions including Buddhism, Hinduism and Taoism. Recommended: Pass RD-090 or placement in RD-115.

R-204 History of Christianity
4 credits, Winter

R-210 World Religions
4 credits, Fall/Winter/Spring
An overview course that examines Eastern/Western religions and philosophies through film, text, and/or online presentations. Introduces Hinduism, Buddhism, Chinese religions, Christianity, Judaism and Islam. Recommended: Pass RD-090 or placement in RD-115.
R-211 History of the Old Testament 4 credits, not offered every term

R-212 History of the New Testament 4 credits, Fall/Spring
Covers the first century influences on the New Testament texts, the life of Jesus, and the Pauline letters. Other early writings will be discussed. Recommended: Pass RD-090 or placement in RD-115.

R-214 The Historical Jesus 4 credits, Spring
An examination of the “Quest for the Historical Jesus” beginning with Albert Schweitzer through contemporary scholarship. Required: Successful completion of or current enrollment in RD-115.

R-280 Religion/CWE 2-6 credits, Fall/Winter/Spring
Cooperative work experience. Provides students with on-the-job work experience in the field of religion. Required: Instructor consent & a CWE seminar.

RD

Reading
See also Study Skills (EL).

RD-080 Fundamentals of College Reading
3 credits, Fall/Winter/Spring
Focuses on fundamental reading skills for non-fiction text, including identifying main ideas, supporting details and organizational patterns. Vocabulary improvement emphasizes dictionary skills. Core reading comprehension strategies and inferences are introduced. Prerequisite: Placement in RD-080.

RD-090 Intermediate Reading Skills
3 credits, Fall/Winter/Spring
Introduces and reinforces skills for success in entry-level college classes. Emphasizes vocabulary building, comprehension, reading strategies, critical thinking. Prerequisite: Pass RD-080 or placement in RD-090.

RD-115 College Reading
3 credits, Fall/Winter/Spring
This transfer elective course presents reading strategies for success in college-level classes. Emphasizes comprehension, efficiency critical reading and thinking, and application of reading strategies appropriate to a variety of materials. Vocabulary development is also addressed. Prerequisite: Pass RD-090 or placement in RD-115.

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

Real Estate

RE-118 Real Estate Appraisal I
3 credits, not offered every year
Overview of real property concepts and characteristics, legal considerations, value influences, real estate finance, types of value, economic principles, real estate markets and analysis, and ethics in appraisal.

RE-228 Real Estate Appraisal II
3 credits, not offered every year
Overview of real estate appraisal approaches to valuation procedures, value, property description, residential applications, commercial applications, improvement construction, home inspection, and appraisal math.

RE-238 Real Estate Appraisal III
3 credits, not offered every year
Course offers a basic understanding and knowledge of the residential sales comparison and income approaches to appraisal. It includes the valuation principles and procedures applicable to both approaches.

RE-244 Market Analysis/Highest and Best Use
1 credit, not offered every year
Identifying and analyzing market forces affecting the buyer's and seller's behavior is a key factor in understanding and reporting values. Designed to give students the tools needed to properly collect and analyze market data.

RE-245 Residential Site Valuation and Cost Approach
1 credit, not offered every year
Help students gain valuable insight and a working knowledge of the various theories and methodologies for arriving at residential site values and applying the Cost Approach in residential appraising. Advantages/disadvantages of using the Cost Approach and distinction between Replacement Cost new and Reproduction Cost New.

RE-246 Residential Report Writing
1 credit, not offered every year
Introduces theories, techniques, and procedures to help understand the process and how to use various residential forms and reports for appraisal. Provides practical application of real estate appraisal report writing procedures through theory and hands-on examples of appraisal processes.

Renewable Energy Technology
For additional information contact the Manufacturing Department at 503-594-3318.

RET-150 Home-Built Wind Turbine
2 credits, not offered every term
Covers construction of home-built wind power generators using welding and cutting processes, drill press, and wood cutting hand tools. Students will participate in the construction of windmill power generators. Instruction will include discussions of windmill types, efficiencies, adequate versus sophisticated designs, and directions for the lab projects. The course will use a process published in “Homebrew Wind Power” by Dan Bartmann & Dan Fink (recommended reading).
CONCLUSION
Visit Clackamas Community College on the web at www.clackamas.edu

COURSE DESCRIPTIONS

RET-200 Renewable Energy Systems
3 credits, Fall
This course provides a survey of various renewable energy systems. Participants will learn about the benefits and limitations of each type of energy source as well as their functional principles. Students will participate in several field learning exercises related to energy systems. The intended audiences are technical students wishing to explore the Renewable Energy field and students from the humanities and social sciences wanting a better understanding of this socially important technology.

RET-209 Renewable Energy I: Energy Efficiency
3 credits, Winter
This course concentrates on the conservation of scarce energy resources in residential, commercial and industrial applications. The course will examine the common sources of energy loss in building systems and homes, industrial processes and transportation. Students will be introduced to residential energy audits and mitigation. Topics will also include regenerative transportation systems, LEED certification, test instruments, insulation values, heat exchangers and financial payback period. Includes hands-on lab exercises. Prerequisite: RET-200.

RET-211 Renewable Energy II: System Fundamentals
3 credits, Spring
This course in renewable systems will provide in-depth understanding of the technology, economics and policies relevant to each type of energy source. Analysis techniques to evaluate renewable energy applications from a systems design and selection perspective will be presented. Topics include physical operating principles, theoretical vs. actual system output, energy storage, efficiency and cost analysis. Includes hands-on lab exercises. Prerequisite: RET-209.

RET-213 Renewable Energy III: Installation and Maintenance
3 credits, Fall
The third in a series of technical courses, RET III: Installation and Maintenance will provide an introduction to installation and maintenance of renewable energy systems for commercial and residential installations. Students will apply their knowledge of electro-mechanical systems to the application of these systems. Topics covered will include site survey, site preparation, building codes, measurement tools, preventative maintenance and worksite safety. Includes hands-on lab exercises. Prerequisite: RET-211.

RET-215 Renewable Energy IV: Systems Design
3 credits, Winter
This fourth course in the series will concentrate on systems design for renewable energy applications. Students will work together and apply concepts to evaluate, design and select one or more renewable energy systems for solar, wind or micro-hydro installations. Topics will include site surveys, structural elements, electrical generators, energy storage and electrical inversion. Prerequisite: RET-213.

RET-217 Renewable Energy Capstone Project
3 credits, Spring
This final class in the Renewable Energy series will concentrate on a capstone project. Students will evaluate a proposal for an alternative energy solution and then design an installation to meet the needs of the proposal. Students will be expected to perform a site survey, quantify energy requirements, select appropriate technologies, calculate the payback period and finally fabricate an actual or conceptual energy solution where appropriate. Prerequisite: RET-215.

RET-240 Alternative Fuels
4 credits, Fall
Offers students familiarity and entry levels to work with alternative fuel systems. Explores (technically, economically and ecologically) the following alternative fuels: bio-diesel, vegetable oils, electricity, ethanol, hydrogen, propane, methanol, natural gas, heat engines, fuel cell and hybrid vehicles.

RET-280 Renewable Energy/CWE
1-12 credits
Fall/Winter/Spring/Summer
Cooperative work experience. Major emphasis on work-based learning experience in the renewable energy field. Coordination of instruction and evaluation of student job performance will be provided by college faculty in conjunction with employer/supervisor. Required: Instructor consent and a CWE seminar.

SBM Courses with this prefix will not transfer to a four-year institution.

Small Business Management

SBM-020 Small Business Greenhouse 0 credit, Fall/Spring
Two-term intensive training program designed to assist entrepreneurs in planning their business startups, and to develop existing businesses to make them more profitable and to create jobs. Students do extensive individual work on developing business plans with counseling from instructor.

SBM-021 Small Business Management I 0 credit, Fall
Part 1 of a multi-year program to help owners and managers of established businesses manage more effectively and achieve success. Course consists of class meetings, individual business counseling, peer networking, and work in/on the business. Class topics emphasize financial analysis, goals and communication.

SBM-022 Small Business Management II 0 credit, Fall
Part 2 of a multi-year program to help owners and managers of established businesses manage more effectively and achieve success. Course consists of class meetings, individual business counseling, peer networking, and work in/on the business. Class topics emphasize marketing concepts and strategy.
SBM-023 Small Business Management III
0 credits, Fall
Part 3 of a multi-year program to help owners and managers of established businesses manage more effectively and achieve success. Course consists of class meetings, individual business counseling, peer networking, and work in/on the business. Class topics emphasize integrating strategies and business growth.

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

Microelectronics Systems Technology

Courses listed with the SM prefix and courses listed in the Electronics Systems Technology section with the EET prefix are the main core classes for the Microelectronics Systems Technology program. For additional information contact the Manufacturing Department at 503-594-3318.

SM-136 Photolithography
2 credits, Winter
Provides knowledge on the relationship between theoretical and practical aspects of current methods and equipment used in photolithography, as well as troubleshooting common process and equipment-related problems. Recommended: Completion of SM-150.

SM-150 Semiconductor Processing I
2 credits, Fall
Provides general background knowledge on the processes required to manufacture integrated circuit devices, beginning with silicon material preparation and ending with testing of a completed device. Microcontamination also covered.

SM-160 Semiconductor Processing II
2 credits, Winter
Provides an overview of basic processes involved in the fabrication of finished silicon wafers, oxidation and deposition processes. Troubleshooting of common equipment is emphasized. Recommended: Completion of SM-150.

SM-170 Semiconductor Processing III
2 credits, Spring
Covers the essential process and equipment related to etching, diffusion and ion implantation. Troubleshooting of common equipment and process related problems are emphasized. Recommended: Completion of SM-150.

SM-229 Vacuum Technology
2 credits, Spring
Focuses on elementary theory and practice of vacuum equipment for microelectronics processing. Students study vacuum fundamentals, pumps and equipment used in vacuum systems. Recommended: Completion of SM-150.

SM-280 Electronics & Microelectronics/CWE
2-6 credits, Fall/Winter/Spring/Summer
Cooperative work experience. Practical experience in the high-tech industry. Coordination of instruction will occur with industry and the manufacturing and cooperative work departments. Required: Instructor consent and a CWE seminar.

SOC Sociology

SOC-204 Introduction to Sociology
4 credits, Fall/Winter/Spring
Explores the social perspectives on the principles and processes of human social behavior. Examines concepts such as culture, socialization, social structure, roles, groups, organizations, and social stratification and introduces various sociological theories and research methodologies. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

SOC-205 Social Stratification and Social Systems
4 credits, Fall/Winter/Spring
Examines issues of social structure and social stratification. Explores the various social institutions (family, economy, education, health, religion and politics) and the inequalities of race, class, gender, age, sexual orientation and disability, as well as various theoretical perspectives. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

SOC-206 Institutions and Social Change
4 credits, Fall/Winter/Spring
Examines various social institutions (family, economy, education, health, religion and politics), stratification systems, social movements and other various elements of culture from a social change perspective. Various theories of social organization and sources social change will be examined. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

SOC-210 Marriage, Family & Intimate Relations
4 credits, not offered every term
Introduces students to the study of marriage, intimate relations, and family systems from the sociological viewpoint. Students will examine the ways in which race, class, gender, sexuality, community, and society influence patterns of courtship, intimate relations, marriage, and family, and explore the various challenges facing families today. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

SOC-225 Social Problems
4 credits, not offered every term
Applies the sociological framework to the study of social problems, their identification, analysis of causes and possible solutions. Problems explored may include mental disorders, drug and alcohol addiction, crime and delinquency, group discrimination, inequality, poverty, alienation, domestic and international violence, environment, and energy. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

SOC-280 Sociology/CWE
2-6 credits, Fall/Winter/Spring
Provides students with on-the-job work experience in the field of sociology. Required: Instructor consent & a CWE seminar.

SP Speech

See COMM-Communication Studies.
**SPN**

**Spanish**

**SPN-101 First-Year Spanish I**  
4 credits, Fall/Winter/Spring/Summer  
First of a three-term foundational, multimedia course for beginners. Initial emphasis is on speaking and listening comprehension, with secondary emphasis on reading and writing. Various cultural themes are presented. SPN-101/102/103 must be taken in sequence. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**SPN-102 First-Year Spanish II**  
4 credits, Winter/Spring/Summer  
Second of a three-term foundational, multimedia course for beginners. Initial emphasis is on speaking and listening comprehension, with secondary emphasis on reading and writing. Various cultural themes are presented. SPN-101/102/103 must be taken in sequence. Prerequisite: Pass SPN-101 or instructor consent.

**SPN-103 First-Year Spanish III**  
4 credits, Spring/Summer  
Third of a three-term foundational, multimedia course for beginners. Initial emphasis is on speaking and listening comprehension, with secondary emphasis on reading and writing. Various cultural themes are presented. SPN-101/102/103 must be taken in sequence. Prerequisite: Pass SPN-102 or instructor consent.

**SPN-201 Second-Year Spanish I**  
4 credits, Fall  
First of a three-term intermediate, multimedia course. Concentration is on speaking, listening comprehension, reading and writing. Explores cultural differences among Spanish-speaking countries and between the latter and European-American culture. Prerequisite: Pass SPN-201 or instructor consent.

**SPN-202 Second-Year Spanish II**  
4 credits, Winter  
Second of a three-term intermediate, multimedia course. Concentration is on speaking, listening comprehension, reading and writing. Explores cultural differences among Spanish-speaking countries and between the latter and European-American culture. Prerequisite: Pass SPN-201 or instructor consent.

**SPN-203 Second-Year Spanish III**  
4 credits, Spring  
Third of a three-term intermediate, multimedia course. Concentration is on speaking, listening comprehension, reading and writing. Explores cultural differences among Spanish-speaking countries and between the latter and European-American culture. Prerequisite: Pass SPN-202 or instructor consent.

**SPN-211 Intermediate Spanish Conversation**  
3 credits, Fall  
Emphasis will be to continue to develop oral proficiency beyond that achieved by the end of the second year of Spanish including expanding vocabulary and broadening the student’s cultural awareness of the Spanish-speaking world. Grammatical explanations will be kept to a minimum. Prerequisite: Pass SPN-203 or instructor consent.

**SPN-212 Intermediate Spanish Conversation**  
3 credits, Winter  
Emphasis will be to continue to develop oral proficiency beyond that achieved by the end of the second year of Spanish including expanding vocabulary and broadening the student’s cultural awareness of the Spanish-speaking world. Grammatical explanations will be kept to a minimum. Prerequisite: Pass SPN-203 or instructor consent.

**SPN-213 Intermediate Spanish Conversation**  
3 credits, Spring  
Emphasis will be to continue to develop oral proficiency beyond that achieved by the end of the second year of Spanish including expanding vocabulary and broadening the student’s cultural awareness of the Spanish-speaking world. Grammatical explanations will be kept to a minimum. Prerequisite: Pass SPN-203 or instructor consent.

**SSC**

**Social Science**

**SSC-160 Faith & Reason**  
5 credits, not offered every term  
Introduction to classical philosophy, sacred texts, modern fiction, poetry, theology, evolutionary biology, and cosmology. Consideration of how personal concepts of faith and reason and institutions of science and religion, shape personal intellectual landscapes. Recommended: Pass RD-090 or placement in RD-115.

**SSC-170 Metamorphoses**  
5 credits, not offered every year  
Investigates the process of change within human cultures and individuals. By exploring myth, science, art, religion, and literature, we approach a better understanding of the ability of humans to change. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

**SSC-180 Pathway to Sustainability**  
5 credits, Fall  
Can we create a more sustainable and just world? Will we question our assumptions regarding economic models, democracy, our relationships with the environment, and social structures? What are the roots of the current ecological crisis? Recommended: Pass RD-090 or placement in RD-115.

**SSC-181 Pathway to Sustainability**  
5 credits, Winter  
Can we create a more sustainable and just world? How do socially meaningful changes come about? What are the ecological and social repercussions of the choices we make? Are ecological and social justice concerns linked? Recommended: Pass RD-090 or placement in RD-115.

**SSC-182 Pathway to Sustainability**  
5 credits, Spring  
Can we create a more sustainable and just world? What can our personal roles in change be? How can we stimulate local sustainable economies? What analysis is useful in assessing ecological impacts? Recommended: Pass RD-090 or placement in RD-115.
SSC-233 Electronic Culture
4 credits, not offered every term
An introduction to the interdisciplinary field of electronic culture, focusing on the use of electronic computer technology by individuals and groups. Examines transformation of self, identity, communication, and development of electronic communities and subcultures. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

SSC-235 Perspectives on Terrorism
4 credits, not offered every term
Explores the ways in which different academic disciplines in the social sciences and humanities construct historical, psychological, cultural, theological, sociological, and philosophical arguments and themes around the topic of terrorism and terrorist-related issues. Identifies underlying assumptions upon which these arguments and themes are based and considers the cultural expressions they both engender and reflect. Prerequisites: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

SSC-240 American Military Conflict: Total War
4 credits, not offered every term
Provides students with the fundamental knowledge of the politics and geography of United States military operations when conducting “Total War” as applied in conflicts from The Civil War through WWII. Recommended: Pass RD-090 or placement in RD-115.

SSC-241 The American Military Conflict: The Cold War
4 credits, not offered every term
Provides students with the fundamental knowledge of the politics and geography of United States military operations when conducting “The Cold War” as applied in conflicts in Korea, Vietnam and the planned defense of Western Europe. Recommended: Pass RD-090 or placement in RD-115.

SSC-242 The American Military Conflict: The War on Terror
4 credits, not offered every term
Provides students with the fundamental knowledge of the politics and geography of United States military operations when conducting “The War on Terror” as applied in conflicts in Libya, Iraq, Afghanistan, and various other parts of the world. Recommended: Pass RD-090 or placement in RD-115.

TA

Theatre Arts

TA-101 Appreciation of Theatre Arts
4 credits, not offered every year
Students will be introduced to basic aspects of theatre arts by attending several productions. Plays are reviewed and evaluated in written form and in group discussion. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

TA-102 Appreciation of Theatre Arts
4 credits, not offered every year
Students will analyze aspects of theatre arts at an intermediate level by attending several productions. Plays are reviewed and evaluated in written form and in group discussion. Recommended: Pass RD-090 or placement in RE-115; pass WR-095 or placement in WR-121.

TA-111 Fundamentals of Technical Theatre
4 credits, Fall
Basic study and practice in techniques of mounting various types of productions for presentation. Includes basic principles and techniques in stage design, construction and lighting. Flexible laboratory sessions available.

TA-112 Fundamentals of Technical Theatre
4 credits, Winter
Intermediate study and practice in techniques of mounting various types of productions for presentation. Includes basic principles and techniques in stage design, construction and lighting. Flexible laboratory sessions available.

TA-113 Fundamentals of Technical Theatre
4 credits, Spring
Advanced study and practice in techniques of mounting various types of productions for presentation. Includes basic principles and techniques in stage design, construction and lighting. Flexible laboratory sessions available.

TA-141 Acting I
4 credits, Fall
Studies the methods, techniques and theories of acting as an art form. Performance of lab exercises and monologues/scenes from published dramatic literature with written assignments to include response and analysis papers. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

TA-142 Acting II
4 credits, Winter
Further studies the methods, techniques and theories of acting as an art form. Performance of lab exercises and monologues/scenes from published dramatic literature with written assignments to include response and analysis papers are the basic teaching approaches. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

TA-143 Acting III
4 credits, Spring
An in-depth study of the methods, techniques, and theories of acting as an art form. Performance of lab exercises and monologues/scenes from published dramatic literature with written assignments to include response and analysis papers are the basic teaching approaches. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisite: Pass TA-141 or TA-142 or instructor’s consent.

TA-153 Theatre Rehearsal/Performance
1-3 credits, Fall/Winter/Spring
Training in theatre production through intensive study and rehearsal of scenes and plays for public performances. Required: Instructor consent and successful audition. Can be repeated for up to 6 credits.
TA-195 Student Performance Showcase
1-3 credits, Fall/Winter/Spring
Training in special forms of theatrical presentation through in-class intensive preparation, study, and program development for public presentation including comedy improv, stand-up comedy, and student directed one-act plays. Required: Instructor consent and successful audition. Can be repeated for up to 6 credits.

TA-211 Technical Theatre Study
4 credits, Fall
Comprehensive study and practice in presentational graphics, scene design, lighting design, and chromatics. The full creative process of staging a production will be explored through aesthetic research and design projects. Includes hands-on participation in CCC’s Mainstage production. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-111, TA-112 and TA-113.

TA-212 Technical Theatre Study
4 credits, Winter
Comprehensive study and practice in presentational graphics, scene design, lighting design, and chromatics. The full creative process of staging a production will be explored through aesthetic research and design projects. Includes hands-on participation in CCC’s Mainstage production. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-111, TA-112 and TA-113.

TA-213 Technical Theatre Study
4 credits, Spring
Comprehensive study and practice in presentational graphics, scene design, lighting design, and chromatics. The full creative process of staging a production will be explored through aesthetic research and design projects. Includes hands-on participation in CCC’s Mainstage production. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-111, TA-112 and TA-113.

TA-241 Shakespeare for Actors
4 credits, not offered every year
Explore character development and performance with particular emphasis on style, genre, language and rhythm. Lecture, discussion and student presentations based on select texts. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-141, TA-142 and TA-143.

TA-242 Acting Techniques: Scene Study
4 credits, not offered every year
An overview of Western theater history from the time of the Greeks to the present. Lecture, discussion and student presentation, including performances from selected scenes, will be used to explore each era of theatre. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121. Prerequisites: Pass TA-141, TA-142 and TA-143.

TA-243 Play Direction
4 credits, not offered every year

TA-253 Theatre Rehearsal/Performance
1-3 credits, Fall/Winter/Spring
Training in theatre production through intensive study and rehearsal of scenes and plays for public performances. Required: Instructor consent and successful audition. Can be repeated for up to 6 credits.

TA-280 Theatre/CWE
2-6 credits, Fall/Winter/Spring
Provides student with a learning experience related to course of study and career goal. Major emphasis will be given to on-the-job experience and training. Required: Instructor consent & a CWE seminar.

TA-295 Student Performance Showcase
1-3 credits, Fall/Winter/Spring
Training in special forms of theatrical presentation through in-class intensive preparation, study, and program development for public presentation including comedy improv, stand-up comedy, and student directed one-act plays. Required: Instructor consent and successful audition. Can be repeated for up to 6 credits.

Transportation & Logistics

TTL-101 Introduction to Professional Truck Driving & Logistics
4 credits, Fall/Winter/Spring/Summer
Introduction to logistics and commercial vehicle operation, covering control systems, coupling procedures, cargo handling and pre-trip inspections. Covers regulations and requirements for CDL, speed management, road conditions, and accident scene management.

TTL-121 Practical Applications in Professional Truck Driving & Logistics
6 credits, Fall/Winter/Spring/Summer
Demonstration of skill development related to safe commercial vehicle operation. In-depth coverage of logistics, business processes and communication skills development. Covers delivery vehicle basics, including backing, visual search, shifting, turning, space and speed management.

TTL-124 Fundamentals of Material Handling and Logistics
4 credits, not offered every term
Fundamental concepts of materials handling tools, equipment, techniques and logistics. Emphasis on efficiency of movement and storage, and importance of control and protection. Includes a facility tour and viewing web resources. Recommended: Pass RD-080 or placement in RD-090.
TTL-141 Transportation & Logistics Customer Service Skills 1-3 credits, Spring  
Focuses on building necessary skills for outstanding customer service, including effective listening, conflict resolution, and communication. Identify internal and external customers, learn how to handle potentially unproductive interactions, and create positive experiences for all customers.

TTL-180 Transportation & Logistics/ CWE 6 credits, Fall/Winter/Spring/Summer  
Work-based learning experience in the Transportation & Logistics field. Supervision and evaluation of the student’s job performance will be provided by qualified staff of the College and employer.

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

Water & Environmental Technology  
WET-010 Wastewater Operations I 3 credits, Fall  
For professional upgrade only. Does not meet the requirements for the certificate or degree. Introduction to the fundamentals of wastewater treatment plant operation. Includes collections systems, preliminary and primary treatment, waste characteristics including organic removals, and solids profiles.

WET-011 Waterworks Operations I 3 credits, Fall  
For professional upgrade only. Does not meet the requirements for the certificate or degree. Introduction to municipal drinking water treatment and distribution systems. Basic waterworks hydraulics, drinking water regulations, waterworks math, waterworks bacteriology, and introduction to water disinfection.

WET-020 Wastewater Operations II 3 credits, Winter  
For professional upgrade only. Does not meet the requirements for the certificate or degree. Secondary wastewater treatment alternatives with municipal application. Fixed and suspended film systems and clarification process. Includes biological sludge treatment. Prerequisite: Pass WET-010.

WET-021 Waterworks Operations II 3 credits, Winter  
For professional upgrade only. Does not meet the requirements for the certificate or degree. Basic hydrology, ground water and surface water sources, well construction and operation, introduction to water chemistry, waterworks hydraulics, and fundamentals of pumps and pumping. Prerequisite: Pass WET-011.

WET-030 Wastewater Operations III 3 credits, Spring  
For professional upgrade only. Does not meet the requirements for the certificate or degree. Design, operation, process control, and maintenance of treatment facilities. Current treatment processes discussed in detail with particular attention given to biological sludge handling process. No lab requirement for this course. Prerequisite: Pass WET-020.

WET-031 Water Treatment 3 credits, Spring  
For professional upgrade only. Does not meet the requirements for the certificate or degree. Design, operation, and process control of water treatment plants. Includes water chemistry, related math, coagulation, sedimentation, filtration, and disinfection. Review for Oregon Operator certification exams. No lab requirement for this course. Prerequisite: Pass WET-021.

WET-109 Backflow Assembly Operation and Testing 3 credits, Fall/Winter/Spring/Summer  
A lecture course with lab component that focuses on backflow assembly hydraulics, operations, installation, and testing.

WET-110 Wastewater Operations I 3 credits, Fall  
Introduction to the fundamentals of wastewater operations. Includes collection systems, preliminary and primary treatment, waste characteristics including organic removals, and solids profiles. Prerequisite: Pass MTH-065 or placement in MTH-080. Corequisite: MTH-082A.

WET-111 Waterworks Operations I 3 credits, Fall  
Introduction to municipal drinking water treatment and distribution systems. Basic waterworks hydraulics, drinking water regulations, waterworks math, waterworks bacteriology, and introduction to water disinfection. Prerequisite: Pass MTH-065 or placement in MTH-080. Corequisite: MTH-082B.

WET-120 Wastewater Operations II 3 credits, Winter  

WET-121 Wastewater Operations III 3 credits, Winter  
Basic hydrology, ground water and surface water sources, well construction and operation, introduction to water chemistry, waterworks hydraulics, and fundamentals of pumps and pumping. Prerequisite: Pass WET-111. Corequisite: MTH-082D.

WET-122 Water Distribution/ Wastewater Collection Systems 3 credits, Winter  
Elementary engineering aspects of water distribution and wastewater collection systems. System components, construction materials, pump station design, and related topics. Prerequisite: Pass WET-110. Corequisite: WET-120.

WET-123 Environmental Chemistry I 3 credits, Winter  
Theory and applied laboratory techniques for testing water and wastewater. Students will test wastewater for NPDES required tests. Prerequisite: Pass CH-104.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WET-125</td>
<td>High Purity Water Production I</td>
<td>3</td>
<td>Spring</td>
<td>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, electrodialysis, UV, ozonation, degasification, and microfiltration. Prerequisite: Pass CH-104. Corequisite: MTH-082E.</td>
</tr>
<tr>
<td>WET-130</td>
<td>Wastewater Operations III</td>
<td>4</td>
<td>Spring</td>
<td>Design, operation, process control, and maintenance of treatment facilities. Current treatment processes discussed in detail with particular attention to biological sludge handling and processing. Lab includes field trips to local wastewater facilities. Prerequisite: Pass WET-120.</td>
</tr>
<tr>
<td>WET-131</td>
<td>Water Treatment</td>
<td>4</td>
<td>Spring</td>
<td>Design, operation, and process control of water treatment plants. Includes water chemistry, coagulation, sedimentation, filtration, and disinfection procedures. Review for Oregon Operator certification exams. Lab includes field trips to local water treatment facilities. Prerequisite: Pass WET-121.</td>
</tr>
<tr>
<td>WET-132</td>
<td>Collection &amp; Distribution Lab</td>
<td>1</td>
<td>Spring</td>
<td>A lab course introducing methods used to monitor and control treatment processes in wastewater, water and high purity water facilities. Advanced water analysis to include typical monitoring of HPW treatment. Fundamentals of control loops, control systems and data management.</td>
</tr>
<tr>
<td>WET-135</td>
<td>High Purity Water Production II</td>
<td>4</td>
<td>Spring</td>
<td>A lab course focusing on the operation of equipment and unit processes in the production of high purity water. Emphasis on process equipment sizing and design, process control and troubleshooting. Prerequisites: Pass WET-125 and MTH-082E.</td>
</tr>
<tr>
<td>WET-180</td>
<td>Water &amp; Environmental Projects I</td>
<td>5</td>
<td>Spring</td>
<td>Practical work experience in a municipal, industrial treatment, distribution, or collection system. Placement in consulting firms, federal and state regulatory agencies, BLM, BPA, and other regulated governmental organizations. Corequisite: CWE Seminar.</td>
</tr>
<tr>
<td>WET-241</td>
<td>Aquatic Microbiology</td>
<td>4</td>
<td>Fall</td>
<td>A lab course with topics in applied microbiology. Methods to detect coliform group in water and wastewater, identification of filamentous bacteria in activated sludge, and identification of indicator protozoa in activated sludge. A bacteriological stream survey project is included. Prerequisite: Pass BI-204.</td>
</tr>
<tr>
<td>WET-242</td>
<td>Hydraulics/Water &amp; Wastewater</td>
<td>3</td>
<td>Fall</td>
<td>Study of closed conduit and open channel flow. Includes hydrostatics, head-loss, pump characteristics, Bernoulli's and the energy equations, and basic characteristics of water. Prerequisite: Pass MTH-065 or placement in MTH-080.</td>
</tr>
<tr>
<td>WET-245</td>
<td>Instrumentation and Control</td>
<td>4</td>
<td>Fall</td>
<td>A lab course focusing on the operation of equipment and unit 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.</td>
</tr>
<tr>
<td>WET-280</td>
<td>Water &amp; Environmental Projects II</td>
<td>5</td>
<td>Fall</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Welding Technology**

Many of these classes can be customized to meet the needs of the industry. For additional information on a customized class for your company, contact the Customized Training Department at 503-594-3199.

**WLD-007A AWS Certification 1 Plate Test**
0 credit, Fall/Winter/Spring/Summer
Welder certification in accordance with AWS D1.1 for one position for students enrolled in any CCC welding course. City card upon request. Required: Instructor consent.

**WLD-007B AWS Certification 2 Plate Test**
0 credit, Fall/Winter/Spring/Summer
Welder certification in any two positions, in accordance with AWS D1.1 for students enrolled in any CCC welding course. City card upon request. Required: Instructor consent.

**WLD-007C AWS Certification Pipe Test**
0 credit, Fall/Winter/Spring/Summer
Welder certification on pipe in accordance with AWS D1.1 for students enrolled in any CCC welding course. City card upon request. Required: Instructor consent.

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WLD-100 Welders’ Print Reading I
3 credits, Fall/Winter
Provides instruction in reading and interpretation of sketches and prints common in the welding industry. Interpretation of conventional drafting symbols, welding symbols, development of basic shop drawings and projects.

WLD-102 Introduction to Welding
2 credits, Fall/Winter/Spring
Designed for the beginner and experimental welder. Includes: oxy-acetylene, stick, wire feed and TIG welding, oxy-acetylene and plasma arc cutting.

WLD-103 Blacksmithing and Traditional Iron Working
2 credits, Fall/Winter/Spring
Introduces the student to basic blacksmithing techniques and processes, as well as terminology, steel types, heat treating and tool making. Multiple projects allow the student to practice the varied methods of manual metal forming. No welding experience required.

WLD-104 Introduction to CNC Plasma Cutting
2 credits, not offered every term
Introduces the student to the basics of CNC plasma cutting. Participants will learn operation and set-up procedures for CNC plasma as well as geometry creation and programming. This course is recommended for anyone interested in CNC plasma cutting for industry applications or artwork.

WLD-110 Welder Certification
1-4 credits, Fall/Winter/Spring
Provides theory and practical instruction in welder certification. Choose FCAW, SMAW, or GTAW for certification. May be repeated for up to 11 credits.

WLD-111 Shielded Metal Arc Welding (Stick)
8 credits, not offered every term
Provides students with the opportunity to acquire knowledge and skills to perform fillet and groove welds in all positions with the SMAW process. Oxy-fuel cutting, air carbon arc cutting and gouging also covered.

WLD-111A Shielded Metal Arc Welding (Stick)
4 credits, not offered every term
Part one of WLD-111 which provides opportunity to acquire knowledge and skills to perform fillet and groove welds in flat and horizontal positions with the SMAW process.

WLD-111B Shielded Metal Arc Welding (Stick)
4 credits, not offered every term
Part two of WLD-111 with additional opportunity to perform various welds in vertical and overhead positions with the SMAW process. Prerequisite: Pass WLD-111A.

WLD-112 Introduction to Shielded Metal Arc Welding Pre-Pipe Welding
2 credits, Fall/Winter/Spring
Provides beginning theory and practical instruction in SMAW in preparation for pipe welding. Stringer, fillet, root groove welds on plate and oxy-fuel cutting will be covered. Prerequisite: Pass WLD-111 or Pass WLD-111A and WLD-111B, Pass WLD-150 or prior experience in SMAW.

WLD-113 Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)
8 credits, not offered every term
Acquire knowledge and skills to perform fillet and groove welds in all positions with GMAW and FCAW. Oxy-fuel and plasma cutting also covered.

WLD-113A Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)
4 credits, not offered every term
Part one of WLD-113 which provides the opportunity to acquire knowledge and skills to perform fillet and groove welds in flat and horizontal positions with GMAW and FCAW processes. Oxy-fuel and plasma cutting also covered.

WLD-113B Gas Metal Arc Welding/Flux-Core Arc Welding (Wirefeed)
4 credits, not offered every term
Part two of WLD-113 which provides additional knowledge and skills to perform fillet and groove welds in vertical and overhead positions with the GMAW and FCAW processes. Prerequisite: Pass WLD-113A.

WLD-115 Gas Tungsten Arc Welding (GTAW)
8 credits, not offered every term
Acquire knowledge and skills to perform fillet and groove welds in various positions on steel, stainless steel and aluminum with the GTAW process. Plasma cutting also covered.

WLD-115A Gas Tungsten Arc Welding (GTAW)
4 credits, not offered every term
Part one of WLD-115 which provides opportunity to acquire knowledge and skills to perform fillet and groove welds in flat and horizontal positions on steel, stainless steel and aluminum with the GTAW process. Prerequisite: Pass WLD-115A.

WLD-115B Gas Tungsten Arc Welding (GTAW)
4 credits, not offered every term
Part two of WLD-115 which provides additional opportunity to perform various welds in vertical and overhead positions on steel, stainless steel and aluminum with the GTAW process. Prerequisite: Pass WLD-115A.

WLD-150 Welding Processes
4 credits, Fall/Winter/Spring/Summer
Covers oxy-acetylene welding, brazing, cutting, stick welding, wire feed, oxy-fuel and plasma cutting. Includes: safety, electrical fundamentals, routine maintenance, minor repairs, and terms and definitions.

WLD-200 Welders’ Print Reading II
3 credits, Spring
Provides instruction in reading and interpretation of sketches and prints common in the welding industry. Interpretation of basic shop drawing views and projections. Includes basic layout and math review. ISO and AWS symbols and weld joints are covered. Recommended: Completion of WLD-100.

WLD-203 Blacksmithing & Traditional Iron Working II
2 credits, Fall/Winter/Spring
Course builds on the WLD-103 course and expands on the process of forged metal work. Instruction includes power hammer use, tooling design, traditional joinery and intermediate projects. Welding experience helpful, but not required.
WLD-205 Structural Steel Inspection, Code and Standards  
4 credits, not offered every term  
Teaches students a systematic method in the application and understanding of the Structural Steel Welding Code. Develop technical and hands-on knowledge necessary for reading and understanding AWS Structural Steel Welding Code, inspection techniques, Non-Destructive Testing (NDT), manufacturing and construction practices.

WLD-210 Beginning Shielded Metal Arc Welding Pipe Welding  
2 credits, Fall/Winter/Spring  
Provides an opportunity to acquire knowledge and skills to perform open root groove welds on plate and pipe using E6010 and E7018. Oxy-fuel pipe cutting is included. Prerequisite: Pass WLD-112.

WLD-211 Advanced Shielded Metal Arc Welding  
4 credits, not offered every term  
Acquire knowledge and skills to perform groove welds in all positions using the SMAW process. Cutting and gouging processes, advanced welding theory, and AWS welding procedures are included. Prerequisite: Pass WLD-111 or Pass WLD-111A and WLD-111B.

WLD-212 Shielded Metal Arc Welding Pipe Welding  
2 credits, Fall/Winter/Spring  
Provides theory and practical instruction in open root V groove pipe welding using E6010 and E7018 electrodes. Oxy-fuel pipe cutting will be included. Prerequisite: Pass WLD-211.

WLD-213 Advanced Gas Metal Arc Welding /Flux-Core Arc Welding  
4 credits, not offered every term  
Acquire knowledge and skills to perform groove welds in all positions using the GMAW and FCAW processes. Industrial cutting processes, advanced welding theory and AWS welding procedures are included. Prerequisite: Pass WLD-113 or Pass WLD-113A and WLD-113B.

WLD-215 Advanced Gas Tungsten Arc Welding  
4 credits, not offered every term  
Acquire knowledge and skills to perform welds in all positions on plain carbon steel, stainless steel and aluminum using the GTAW process. Industrial cutting processes, advanced welding theory and AWS welding procedures are included. Prerequisites: Pass WLD-115 or Pass WLD-115A and WLD-115B.

WLD-230 CNC Press Brake  
3 credits, not offered every term  
Hands-on class where students will learn how to safely set-up and operate a Computerized Numerically Controlled (CNC) Press Brake. Subjects include: basic calculations related to metal forming, tooling, fundamentals, flat pattern development concepts, and CNC forming techniques. Prerequisites: Pass MTH-050 and WLD-100.

WLD-250 Welding Fabrication I Beginning Project  
4 credits, not offered every term  
Instruction in fabrication techniques including blueprint reading, layout, sketching, bills of material, job cost calculations, measuring, fitting, cutting and welding. Beginning projects will be assigned. Prerequisite: Pass WLD-111, WLD-113 or WLD-115.

WLD-251 Welding Fabrication II Intermediate Project  
4 credits, not offered every term  
Students will be assigned intermediate fabrication projects based on skills learned in WLD-250 Welding Fabrication I Beginning Project. Prerequisite: Pass WLD-250.

WLD-252 Welding Fabrication III Advanced Project  
4 credits, not offered every term  
Students will use techniques from WLD-250 Welding Fabrication I Beginning Project and WLD-251 Welding Fabrication II Intermediate Project to build advanced projects. Students will be responsible for managing their projects to completion. Prerequisite: Pass WLD-251.

WLD-261 Welding Special Projects  
1-2 credits  
Fall/Winter/Spring/Summer  
Allows students to improve their welding skills while working on instructor-approved projects. May be repeated for 9 credits.

WLD-280 Welding Technology/CWE  
1-6 credits  
Fall/Winter/Spring/Summer  
Work-based learning experience in the welding trades. Coordination of instruction will occur with industry and the CWE department. Required: Instructor consent and a CWE seminar.

WR  
Writing  
WR-080 Basic Writing Skills  
3 credits, Fall/Winter/Spring  
Emphasizes paragraph development for native English speakers who wish to enhance basic writing skills. Grammar and punctuation are addressed in class and in a lab setting. Prerequisite: Placement in WR-080.

WR-090 Fundamentals of English  
3 credits, Fall/Winter/Spring  
Writing confidently and solving problems in grammar, punctuation, and usage. Prerequisite: Pass WR-080 or placement in WR-090.

WR-095 Paragraph to Essay  
3 credits, Fall/Winter/Spring/Summer  
Preparatory study for transfer writing courses, with emphasis on paragraph construction and short papers. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-090 or placement in WR-095.

WR-101 Communication Skills: Occupational Writing  
3 credits, Fall/Winter/Spring/Summer  
Develops basic modes of technical writing, including summaries, process analysis, instructions, and reports. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121.
WR-121 English Composition
4 credits, Fall/Winter/Spring/Summer
Introduces the academic essay: analyzing and developing a topic, writing grammatically correct and organized essays, reading professional writing, and applying writing techniques to a range of academic essay styles. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121.

WR-122 English Composition
4 credits, Fall/Winter/Spring/Summer
Major principles of argumentation and persuasion. Analyzing and writing persuasive essays. Finding, using, and documenting sources. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-121 with a C or better.

WR-123 English Composition
3 credits, Fall/Winter/Spring/Summer
Writing the longer academic research paper: format and style, advanced research techniques, and organizational skills. Recommended: Pass RD-090 or placement in RD-115. Prerequisites: Pass WR-122.

WR-127 Scholarship Essay Writing
1 credit, Fall/Winter
Introduces scholarship resources and the application process. Examines and applies the concept of “telling the story of me,” and drafting, revising, and editing a complete scholarship application essay.

WR-140 Introduction to Writing Creatively
4 credits, Fall/Winter/Spring
Guides students through the discussion and practice of writing creatively in many genres, primarily poetry, fiction, drama, and creative nonfiction in a workshop format. May also include screenwriting, film, and performance genres. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

WR-146 Publishing Chapbooks
1 credit, not offered every year
Editing, preparing, and printing individual student chapbooks (poetry, fiction, creative nonfiction, or drama). Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

WR-222 English Composition
4 credits, not offered every year
Writing university-level research papers and pursuing lifelong learning through advanced research, culminating in an original research paper and class presentation of findings. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-121 & pass WR-122.

WR-227 Technical Report Writing
4 credits, Fall/Winter/Spring/Summer
Introduction to report and proposal writing, stressing organization, form and style. Emphasis on materials gathered from professional fields such as medicine, dentistry, government, criminal justice, business, engineering, technology, science and public relations. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-121 with a C or better.

WR-239 Creative Nonfiction Intensive
1 credit, not offered every year
Techniques of developing and editing creative nonfiction (personal essays, memoirs, and literary journalism). Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

WR-240 Creative Writing: Nonfiction
4 credits, not offered every term
Techniques of writing and analyzing types of creative nonfiction such as literary journalism, memoirs, nature or science writing and personal essays. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121 or instructor consent.

WR-241 Creative Writing: Fiction
4 credits, Fall/Winter
Techniques of creative writing and the development of critical appreciation of the art of writing fiction. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121 or instructor consent.

WR-242 Creative Writing: Poetry
4 credits, Fall/Winter
Techniques of poetry writing. Analysis of the craft of poetry in traditional and non-traditional forms. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121 or instructor consent.

WR-243 Creative Writing: Playwriting
4 credits, not offered every term
Designed for students with previous writing experience who wish to learn the technique of playwriting, including the art of dialogue and the elements of dramatic structure. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121 or instructor consent.

WR-244 Advanced Fiction Writing
4 credits, Spring
For students with previous writing experience who wish to learn advanced techniques of writing fiction. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-241 or instructor consent.

WR-245 Advanced Poetry Writing
4 credits, Spring
For students with writing experience who wish to learn advanced techniques of writing poetry, including developing voice and style and exploring publishing. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-242 or instructor consent.

WR-246 Advanced Creative Writing:
Editing & Publishing
4 credits, Winter/Spring
For students with an interest in creative writing and/or literary journal design, layout, and publication who wish to develop editing and publishing skills. Includes the production of a literary journal. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-240, WR-241, WR-242, WR-243, or WR-262 or instructor consent.

WR-249 Publishing on Land and
Online
1 credit, not offered every year
For students with previous writing experience who wish to learn the advantages and disadvantages of publishing online and on land. Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.
WR-262 Introduction to Screenwriting
4 credits, Fall/Spring
Explores the fundamentals of screenplay composition through the use of various writing exercises and workshop techniques. Discussion of dramatic structure and the elements of good storytelling. Recommended: Pass RD-090 or placement in RD-115. Prerequisite: Pass WR-095 or placement in WR-121 or instructor consent.

WR-270 Food Writing
4 credits, Fall
Learn to write uniquely and powerfully about food, from reviews to memoir and personal narrative. Recommended: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

WR-279 Issues in Poetry Writing
1 credit, not offered every year
Techniques of writing poems, with particular focus on a key issue such as the use of imagery, rhythm, or form. Prerequisite: Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

WS
Women’s Studies
WS-101 Introduction to Women’s Studies
4 credits, not offered every term
Course will examine and analyze the position of women in society and critically explore social issues relevant to women’s lives and feminism historically and in the present/future. Topics: family, education, work, healthcare, sexuality, and political/economic status. Recommended: Pass RD-090 or placement in RD-115.

Z
Zoology
Z-201 General Zoology
4 credits, not offered every year
A lab course offering cellular and molecular basis of animal life including genetics, evolution, systematics, and protozoan diversity. Recommended: Pass MTH-095 with a C or better or placement in MTH-105 or MTH-111; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

Z-202 General Zoology
4 credits, not offered every year
A lab course covering the maintenance of the cellular environment, evolution of animal systems, and diversity of the less complex invertebrate animal phyla. Recommended: Pass MTH-095 with a C or better or placement in MTH-105 or MTH-111; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.

Z-203 General Zoology
4 credits, not offered every year
A lab course covering diversity of the more complex invertebrate and vertebrate animal phyla. Includes animal behavior, distribution, ecology, and conservation. Recommended: Pass MTH-095 with a C or better or placement in MTH-105 or MTH-111; pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121.
CLACKAMAS COMMUNITY COLLEGE
BOARD OF EDUCATION

Term ends
Ron Adams 2015
Jean Bidstrup 2013
Greg Chaimov 2013/15
Judy Ervin 2013
Chris Groener 2013
Richard Oathes 2013
Jane Reid 2013

CLACKAMAS COMMUNITY COLLEGE
PRESIDENT
Dr. Joanne Truesdell

2013-14
FACULTY & ADMINISTRATION

Computer Science
A.A.S. Parkland Community College
B.S. University of Arkansas
M.S. University of Arkansas

Altman, Matthew (2010)
Associate Dean, Arts & Sciences
B.A. Johns Hopkins University
M.S. Northwestern University
J.D./MIP University of New Hampshire
School of Law (formerly Franklin Pierce Law Center)

Andersen, David R. (1997)
Art
M.F.A. Brigham Young University

Anderson, Craig J. (2007)
Manufacturing/Engineering Technology
A.S. Oregon Technical Institute
B.S. Oregon State University
M.S.M. Multnomah Seminary

Nursing
R.N. Good Samaritan School of Nursing

Arter, David B. (1986)
Physical Science
B.A. University of California
Ph.D. University of Illinois

Bachmann, Anne B. (2000)
English as a Second Language
B.A. Portland State University
M.A. Portland State University

Skills Development
B.A. Indiana University
M.A. University of Oregon

Baratto, Stefan (2000)
Mathematics
B.G.S. University of Michigan
M.S. University of Oregon

Beining, Steven (2008)
Distance Learning
B.A. University of Wisconsin
M.S. Portland State University

Bello, Chippi S. (2006)
Director, Financial Aid
B.S.W Brigham Young University
M.S. Ed. Portland State University

Foreign Language
B.A. University of Nevada
M.A. University of Nevada

Blackwell, Ernest "Tory" (2012)
Biology
B.S. University of Illinois at Chicago
Ph.D. University of Illinois at Chicago

Blessman, David G. (1998)
Customized Training & Development
B.S. Portland State University
M.S. Ed. Portland State University

Bostrom, Gregory A. (2010)
Physics
B.S. Northwest Missouri State University
M.S. University of Illinois at Chicago
M.S. Portland State University

Life Science
B.S. University of Nevada, Reno
M.S. University of Nevada, Reno

Bradbury, Sue A. (2006)
Nursing
B.S.N. Keuka College
M.S.N. University of Phoenix

Bradley, David A. (1999)
Automotive Technology
A.G.S. Clackamas Community College

Brennan, Kelly J. (1996)
Communication Studies
A.A./A.S. Clackamas Community College
B.S. Portland State University
M.A. Washington State University
Ph.D. Capella University

Briare, William V. (2005)
Dean, Arts & Sciences
B.S. University of Nevada
M.A. Mt. Angel Seminary

Brodnicki, Nora E. (1999)
Art
B.A. Hartwick College
M.A. Syracuse University
M.F.A. State University of New York
at New Paltz

English
B.A. University of California
M.A. Claremont Graduate School

English
B.A. San Francisco State University
M.A. Portland State University

Caldera, Sue J. (2004)
Welding Technology
Welding Certificate, Mt. Hood Community College

Campbell, Robert D. (2012)
Director, Small Business Development Center
B.S. Marylhurst University

Nursing
B.S.N. Montana State University
M.N. Oregon Health & Science University

Carey, Kimberley L. (2005)
Dean, Chief Information Officer
B.S. University of Idaho

Carino, Debra A. (2001)
Computer Science
B.A. Boston University
M.S. California State University

Carino, Enrique (2007)
Computer Science
B.S. Portland State University

Christensen, Kathryn (2006)
Business
B.A. Portland State University
M.B.A. Marylhurst University
PMP Certification

Clarke, Jaime L. (2012)
CASE Grant Project Director
M.A. Gonzaga University

Clem, Pam (2007)
Customized Training & Development
B.S. Eastern Oregon University
M.S. Eastern Oregon University

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Dean, Campus Services
B.S. Portland State University

Coffey, Amanda L. (1998)
English
B.A. Virginia Commonwealth University
M.F.A. Arizona State University

English
B.A. Pacific University
M.A. Portland State University

Corona, Maria J. (2006)
Allied Health Sciences/Dental
A.S. Santa Barbara City College
B.A. Marylhurst University
Certified Dental Assistant
EFDA, EFODA and Radiology Certificate

English
B.S. Western Oregon State College
M.A. Mississippi State University

Manufacturing Technology

DeSau, Carol M. (2001)
Director, Bookstore
B.A. Portland State University

Dickinson, James (1994)
Astronomy
B.S. Oregon State University
M.S. Portland State University
M.S. Portland State University

English
B.A. University of Idaho
M.A. Illinois State University

Dodson, Carol D. (2001)
Nursing
B.S. Sonoma State University
M.S. Oregon Health & Science University

Donnelly, Taylor E. (2012)
English
Ph.D. University of Oregon

Donnelly, Tracy L. (2011)
Director, Health Sciences
B.S. Southern Oregon University
M.P.H. University of Nevada, Las Vegas

Dean, Human Resources
B.S. Oregon State University
M.A. University of Phoenix

Eikrem, James H. (2012)
Theatre Arts
M.F.A. New York University

Executive Director, Foundation
M.S. Oregon State University

Fiskum, Paul K. (1976)
HPE/Assistant Men's Basketball Coach
B.S. Oregon College of Education
M.S. Portland State University

Flippo, Ida F. (1997)
Criminal Justice
B.A. Appalachian State University
M.A.T. Willamette University

History
B.A. University of Tennessee
M.A. University of South Carolina
Ph.D. University of South Carolina

Chemistry
A.A.S. Cottey College
B.S. Linfield College
M.S. University of Oregon

Geiger, Darlene J. (2012)
Associate Dean, Academic Foundations & Connections
B.S. University of Wisconsin
M.S. Portland State University

Dean, Technology, Health Occupations & Workforce
A.A.S. Clackamas Community College
B.S. Eastern Oregon University

Goldstein, Alice (2000)
English as a Second Language
B.A. Stanford University
M.A. Portland State University
J.D. University of California, Berkeley

Gray, S. Kate (1992)
English
B.A. Williams College
M.F.A. University of Washington

Grimaldi, Hugo L. (1997)
Business
B.S. Loyola Marymount University of Los Angeles
M.B.A. University of Portland

Hall, Adam L. (1998)
Mathematics
B.S. Portland State University
M.S. Portland State University

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

Horticulture
B.S. Ball State University
Ph.D. Oregon State University

Hartsock, Donald G. (1988)
Philosophy
B.A. Colorado State University
M.A. Colorado State University
M.A. University of Allahabad, India
Hatfield, R. Dale (1994)  
Business  
B.S. Oregon State University  
M.B.A. University of Portland

Geology  
B.S. North Carolina State University  
M.S. University of Oregon

House, Mark A. (2012)  
Automotive Technology  
A.A.S. Clackamas Community College

Hoyt, H. Ray (2007)  
Director, Customized Training & Development  
B.S. Oregon State University  
M.Ed. Oregon State University  
M.F Oregon State University

Hughes, Kerrie (2007)  
Communication Studies  
A.A. Clackamas Community College  
B.S. Portland State University  
M.A. University of Portland

Hull, Mark R. (2010)  
Mathematics  
B.S. Portland State University  
M.S. Oregon State University

Isham, Suzanne E. (2013)  
Director, Campus Safety  
B.A. Southern Oregon University  
Public Management Certificate, Willamette University

Jones, Melissa L. (2007)  
Student Publications/Journalism  
B.A. University of California, Los Angeles  
M.A. University of Michigan  
M.A. Portland State University

Foreign Language  
B.A. San Diego State University  
M.A. San Francisco State University  
M.B.A. National University

Anthropology  
B.A. University of North Carolina  
M.A. Idaho State University  
Ph.D. University of Oregon

King, Phillip J. (2010)  
Dean, Academic Foundations & Connections  
B.S. Portland State University  
M.S. Portland State University

Kop, Barry K. (2005)  
Life Sciences  
B.S. University of Oregon  
B.A. University of Washington  
Doctor of Chiropractic, University of Western States

Kyser, Carrie L. (2001)  
Mathematics  
B.S. Eastern Michigan University  
M.S. Cleveland State University

LaForce, Matthew J. (2006)  
Water Environmental Technology/Engineering Sciences  
B.S. Cortland College  
M.S. University of Idaho  
Ph.D. University of Idaho

Laugle, Thomas N. (1990)  
Wildland Fire/ESH  
A.A. Clackamas Community College  
A.A.S. Portland Community College  
B.A. Marylhurst University

Lee, Eric F. (2012)  
Engineering Science  
Ph.D. Cornell University

Automotive Technology  
A.S. Southwestern Oregon Community College  
B.S. Oregon Institute of Technology

Lewandowski, Kurt L. (1990)  
Mathematics  
B.S. Southern Utah University  
M.S. Oregon State University

Psychology  
B.A. California State Fullerton  
Ph.D. University of Nevada

Manufacturing Technology  
A.S. Clackamas Community College

Lockwood, Rick D. (2005)  
Automotive Technology  
A.A. College of Sequoias  
ASE Master Tech, LI

Loewen, Carrie J. (2012)  
Manager, Human Resources  
A.A.S. Parkland College  
A.S. Portland Community College  
B.S. Portland State University  
M.A. Lewis and Clark College

Lundy, Elizabeth L. (2009)  
Vice President, Instruction & Student Services  
Vice Provost  
B.S. University of Nebraska  
M.S. Oregon State University

Mach, Susan M. (1997)  
English  
B.A. Pacific University  
M.A. Boston University

Mackey, Terry K. (1998)  
Library  
B.A. University of Montana  
M.L.S. Indiana University

Marks, Brenda A. (1995)  
Student Life & Leadership  
B.S. Oregon State University  
M.S. University of North Texas  
Ed.D. Oregon State University

Martineau, James B. (2009)  
Director, Health, Physical Education & Athletics  
B.S. Southern Oregon University  
M.S. Western Oregon University

Martinez, Guadalupe L. (2000)  
Counseling  
B.A. Oregon State University  
M.A.T.S. Oregon State University

Mattson, Michael W. (1996)  
Manufacturing Technology  
B.S. Purdue University  
M.A. Oregon State University

Mayer, Lillian M. (1992)  
Life Science  
B.A. California State University  
M.A. California State University

Allied Health Sciences/Medical Assistant  
A.G.S. Clackamas Community College  
Registered Medical Assistant (AMT)  
RPbT (ASCP)

McAlpine, Jeffrey B. (2007)  
English  
B.S. Willamette University  
M.A. Portland State University

History  
B.A. University of Southern Mississippi  
M.A. University of Southern Mississippi  
Ph.D. Louisiana State University
HPE/Head Track and Field & Cross Country Coach
B.S. Western Oregon University
M.S. Ed. Western Oregon University

Mathematics
B.Th. Northwest Christian College
M.S. Western Oregon University

Milldrum, Jennifer (2011)
Student A/R Accounts Manager, Bursar
B.S. Portland State University

Foreign Language
B.A. University of Montana
B.A. Portland State University
M.A. Portland State University

Automotive Technology
A.A.S. Clackamas Community College

English/Digital Multimedia Communications
B.A. University of Nevada
M.F.A. San Diego State University

Dean, Curriculum, Planning & Research
B.A. Union College
M.A. Andrews University

Moredock, Paul O. (2012)
ACT-On Grant Project Director
M.S. California State University

Nursing
A.A.S. Portland Community College
B.S.N. Oregon Health & Science University
M.S. University of Portland

Mount, David B. (1992)
English
B.A. California State University
M.A. University of California, Los Angeles

Munro, Suzanne L. (1998)
English as a Second Language
B.A. Westmont College
M.A. Fuller Theological Seminary
M.A. San Francisco State University

Horticulture
B.A. University of Pennsylvania
M.S. Washington State University

HPE
B.S. University of Portland
M.S. Portland State University

Communication Studies
A.A. Seattle Central Community College
B.A. Portland State University
M.A. Portland State University

Nicoletti, Barbara J. (2012)
Director, Institutional Research & Reporting
Ed.D. Portland State University

Skills Development
B.A. University of Oregon
M.Ed. Pennsylvania State University

Library
B.A. University of Washington
M.S. Simmons College

Mathematics
A.S. Clackamas Community College
B.S. Oregon State University
M.S. Portland State University

Nurmi, James T. (2011)
Engineering Science
B.A. Gustavus Adolphus College
Ph.D. Oregon Health & Science University

Ogden, Rebecca S. (1996)
Skills Development
B.S. Portland State University
M.S. Southern Oregon State College

Dean, College Advancement
B.A. Arizona State University
M.A.I.S. Marylhurst University

Parker, Sharon (2007)
Business
B.S. University of Nevada, Las Vegas
M.S. Florida International University
M.B.A. Florida Atlantic University

Patterson, Michael T. (2010)
Anatomy & Physiology
B.S. University of Michigan
M.S. University of Michigan

Manager, Marketing
B.A. University of Oregon

Phelps, John L. (2011)
Welding
A.A.S. Clackamas Community College

Pirie, Melissa S. (2011)
Director, Student & Academic Support Services
B.S. Portland State University
M.Ed. Portland State University

Reilly, Nicole L. (2002)
Nursing
B.S.N. Clemson University
M.N. University of Washington

HPE/Head Wrestling Coach
A.A. Clackamas Community College
B.A. Pacific University
M.A. Pacific University

Risan, Cynthia A. (2010)
Associate Dean, Technology, Health Occupations & Workforce
B.A. University of Idaho
M.S. Capella University

Rizzo, Christopher M. (2010)
Manufacturing Technology
B.F.A. Rochester Institute of Technology

HPE/Head Baseball Coach
B.S. Willamette University
M.A.T. Lewis and Clark College

Robuck, Chris M. (2005)
Director, Fiscal Services
B.S. University of Montana
M.B.A. Western State College of Colorado
Rose, Brian S. (2005)
Music Technology

Life Science
B.S. University of South Dakota
M.S. Rutgers University

Ryan, Joan S. (1994)
Business
B.S. Southern Oregon State University
M.S. Oregon State University
M.B.A. Oregon State University

Sanchez, Camilo M. (2005)
Skills Development
B.A. Mexico State

Schaefer, Stephanie (2012)
Counseling
B.S. University of Oregon
M.A. Pacific University
Psy.D. Pacific University
CADC I

Schneider, Karen T. (2001)
Nursing
Nursing Diploma, St. Vincent School of Nursing
B.S.N. Oregon Health & Science University
M.S. University of Portland

Schulz, Polly A. (2007)
Biology
B.A. University of Oregon
M.S. University of Oregon

Economics
B.S. Portland State University
M.S. Portland State University

Simmons, Bruce E. (2006)
Mathematics
B.S. Duke University
M.S. University of Minnesota

Sims, Casey D. (2007)
Counseling
B.A. Willamette University
M.S. Portland State University

Smith, Michelle J. (2002)
Nursing
B.S.N. University of Portland
M.S. University of Portland

Smith, Vicki M. (2006)
Development Officer

Smith, Yvonne M. (2006)
Education & Human Services
B.S. University of Oregon
M.S.W. Portland State University

Sparks, Rick N. (2011)
Director, Technical Services
B.S. Colorado Christian University
M.S. Regis University

Sprehe, Tara L. (2005)
Director, Enrollment Management/Registrar
B.A. University of Oregon
M.S. Miami University

Terrill, Dawn M. (2012)
Early Childhood Education & Family Studies
B.A. Portland State University
M.A. Portland State University

Thorn, Carol A. (2002)
Nursing
B.S.N. Oregon Health & Science University
M.S. University of Portland

Psychology
B.A. Metropolitan State College
M.S. Portland State University

Tracy, Shelly L. (2007)
President
A.A. Clackamas Community College
B.S. Portland State University
M.B.A. University of Portland
Ed.D. Oregon State University

Truesdell, Joanne (2011)
Manager, Custodial Services

Vergun, Andrea L. (2012)
English as a Second Language
B.S. San Francisco State University
M.A. Portland State University

Allied Health Sciences/Clinical Laboratory Assistant
B.S. Marylhurst University

Wanner, Paul J. (1992)
Applied Technology/Wildland Fire
A.G.S. Clackamas Community College
A.A.S. Clackamas Community College
State of Oregon Vocational Certificate
ASME Certified Senior GDT Professional

Art
B.F.A. University of Hawaii
M.F.A. University of Hawaii

Business
B.S. Portland State University
M.B.A. University of Oregon

Watts, Merrill M. (2011)
Small Business Development Center
B.A. Brigham Young University
M.B.A. Harvard Business School

Whitten, Christopher D. (2006)
Theatre Arts
B.S. Western Oregon University

English as a Second Language
A.A. Columbia College
B.S. University of Missouri
M.A. Portland State University

Manager, Workforce Services Operations

Wilton, Courtney G. (2007)
Vice President, College Services/CFO
B.S. University of Oregon
C.P.A. (retired)

Woods, Kathleen M. (1983)
HPE/Head Volleyball Coach
B.S. Oregon State University
M.Ed. Oregon State University

Yannotta, Mark A. (1998)
Mathematics
B.S.E. Southeast Missouri State
M.A. University of Missouri
A

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