Welcome to OIT

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User’s Guide
To assist you in navigating the 2008-09 General Catalog, we have organized its contents into nine major areas. We have added a general content description of each area. The index at the end of this catalog can help in locating specific information. The general catalog is printed every two years and annually updated on the OIT Web site at www.oit.edu.

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The OIT Admissions Office is located on the first floor of the College Union on the Klamath Falls campus. It is open weekdays from 8 a.m. to 5 p.m. to serve prospective students, applicants and their families, as well as high school guidance counselors, college-transfer advisers and teachers.

If you are interested in seeing the Klamath Falls campus, the Admissions Office's visit coordinator can arrange for you to meet with a faculty member and an admissions counselor, tour the residence hall and the rest of the campus, sit in on a class and/or talk with one of our coaches. To set up a campus visit, call (800) 422-2017 or (541) 885-1150. Hearing-impaired persons may call the TTY number: (541) 885-1072. You also can request a campus visit at www.oit.edu or by e-mailing oit@oit.edu. If you wish to visit one of OIT’s other campuses, the Admissions Office can provide you with a contact person who can make arrangements for you.

Non-Discrimination Policy
Oregon Institute of Technology does not discriminate on the basis of race, color, ethnicity, national origin, gender, disability, age, religion, marital status or sexual orientation in its programs and activities.

The following office is designated to handle inquiries and complaints regarding this non-discrimination policy: Office of Campus Access and Equal Opportunity, OIT, 3201 Campus Dr., Klamath Falls, OR 97601-8801; (541) 885-1031; TTY (541) 885-1072; FAX (541) 885-1520; e-mail: access@oit.edu.

Students with Disabilities
Oregon Institute of Technology is committed to accommodating the academic and programmatic needs of qualified students with disabilities. Students with disabilities who anticipate needing accommodations should contact Services for Students with Disabilities, LRC 210, as soon as possible in advance of enrollment, to ensure timely pro-

vision of services. Questions may be directed to: Services for Students with Disabilities, OIT, 3201 Campus Dr., Klamath Falls, OR 97601-8801. (541) 885-1031; TTY (541) 885-1072; e-mail: access@oit.edu.

Alternate Format
This publication is available in alternate format for persons with disabilities. Please contact the Director of Campus Access and Equal Opportunity at: (541) 885-1031; TTY (541) 885-1072; FAX (541) 885-1520; or e-mail: access@oit.edu.

Accreditation
Oregon Institute of Technology is accredited by the Northwest Commission on Colleges and Universities (NWCCU), 8060 165th Avenue, N.E., Suite 100, Redmond, WA 98052-3981. NWCCU is an institutional accrediting body recognized by the Council for Higher Education and/or the Secretary of the U.S. Department of Education. Accreditation, licensure or approval of individual programs are listed in departmental sections. Copies of accreditation documents are available in the Office of the Vice President for Academic Affairs/Provost, OIT, 3201 Campus Dr., Klamath Falls, OR 97601-8801.

General Catalog Production
The 2008-09 General Catalog was produced by the Public Relations Office, Varelee Lane, director, Kristina Maupin, public information representative, and Susan Kellogg, publications manager; and the Registrar’s Office, Marla Edge, registrar and Crystal Pound, registration specialist. Catalog cover designed by Lisa Stiers, graphic designer; design and typesetting by Susun Cooper, Rocky Ridge Specialties. Information in this catalog was accurate at the time of publication, but is subject to change without notice and does not constitute a contract between OIT and the student or applicant. The general catalog is printed every two years and annually updated on the Web at www.oit.edu.
Mission and Objectives

Preamble
As the Oregon University System (OUS) institution with a focused mission to deliver technology education statewide, Oregon Institute of Technology (OIT) develops and maintains partnerships with public and private institutions, businesses and industries, healthcare organizations and government agencies to ensure quality programs that meet the needs of students and the organizations that employ them. Increasingly, OIT is participating in initiatives to increase access to its technology programs by sharing facilities and human resources with other OUS institutions and community colleges throughout the state.

Mission Statement
Oregon Institute of Technology, the only public institute of technology in the Pacific Northwest, provides degree programs in engineering and health technologies, management, communications and applied sciences that prepare students to be effective participants in their professional, public and international communities. Six objectives are central to our mission:

1. Provide degree programs that enable graduates to obtain the knowledge and skills necessary for immediate employment.
2. Enable students to be effective communicators, responsible citizens and lifelong learners by assisting them in the development of critical thinking and problem solving skills, and ethical and cultural awareness.
3. Offer continuing and distance education and advanced professional studies to meet the emerging needs of today’s citizens.
4. Provide informational and technical expertise to regional, state, national and global publics in applied research.
5. Develop and maintain partnerships with public and private institutions, business and industry, and government agencies to ensure quality programs that meet the needs of students and the organizations that employ them.
6. Provide statewide access to address the needs of the Oregon workforce.

This statement of mission and objectives for OIT was approved by the State Board of Higher Education on Dec. 19, 1999.

Welcome to OIT

You are embarking upon one of the most exciting educational opportunities available. Our applied approach to learning is the main reason so many employers seek OIT alumni.

There are multidisciplinary teams found across campus, including renewable energy efforts, the Mars Reach high-altitude balloon launches, the student newspaper, the campus radio station, the theater club and a variety of other activities and academic pursuits.

Everyone at OIT is proud of our students’ accomplishments. Each individual will find a specific niche within their department, and hopefully in extracurricular offerings, too. Active engagement is a key ingredient to a quality university experience.

Student success is our highest priority; it is not solely measured by impressive placement rates and starting salaries. OIT is equally proud of how well the university rates on student-satisfaction surveys conducted regularly by the Oregon University System. OIT consistently rises to the top in the state university system, with about 90 percent of students reporting they are “very satisfied” with their educational experience.

Part of this satisfaction is the collegial atmosphere on each of our campuses. A student-to-faculty ratio of 15:1 allows for consistent, personal interactions between faculty and students. Faculty members bring their knowledge of industry into the classroom, and OIT students also have myriad opportunities to gain real-world experience through externships and cooperative programs.

Employers have taken notice of the quality exhibited by OIT alumni. The Career Survey of 2006 graduates found a placement rate of 98 percent, and an average starting salary of $48,000.

Your future is just beginning, and everyone at OIT expects it to be filled with success, knowledge and a lifelong connection to the university.
# Academic Calendar 2008-09

## Fall Term, 2008

- **SEP 24-26**: Registration for Fall Term
- **SEP 26-28**: New student orientation
- **SEP 29**: Classes begin
- **SEP 29-OCT 3**: Fee payment
- **OCT 3**: Last day to use WebREG for registration, add/drops
- **OCT 10**: Last day to pay fees or register without late charge
- **NOV 3-14**: Last day to add/register or drop with no record*
- **NOV 14**: Last day to withdraw with a "W"*
- **NOV 26 (1:00 p.m.)–NOV 30**: Thanksgiving holiday
- **DEC 8-11**: Final exams week
- **DEC 12**: Fall Term ends

## Winter Term, 2009

- **NOV 3-14, 2008**: Registration for Winter Term
- **JAN 1**: New Year's holiday
- **JAN 2**: Registration and orientation for new students
- **JAN 5**: Classes begin
- **JAN 5-9**: Fee payment
- **JAN 6**: Last day to use WebREG for registration, add/drops
- **JAN 9**: Last day to pay fees or register without late charge
- **JAN 16**: Last day to add/register or drop with no record*
- **JAN 19**: Martin Luther King, Jr. holiday
- **FEB 16-26**: Registration for Spring Term
- **FEB 20**: Last day to withdraw with a "W"*
- **MAR 16-19**: Final exams week
- **MAR 20**: Winter Term ends

## Spring Term, 2009

- **FEB 16-26**: Registration for Spring Term
- **MAR 30**: Registration and orientation for new students
- **MAR 30**: Classes begin
- **MAR 30–APR 3**: Fee payment
- **MAR 31**: Last day to use WebREG for registration, add/drops
- **APR 3**: Last day to pay fees or register without late charge
- **APR 10**: Last day to add/register or drop with no record*
- **MAY 1**: Registration for summer term for all students begins
- **MAY 11-21**: Registration for Fall Term
- **MAY 15**: Last day to withdraw with a "W"*
- **MAY 25**: Memorial Day holiday
- **JUN 8-11**: Final exams week
- **JUN 12**: Spring Term ends
- **JUN 13**: Commencement

## Summer Term, 2009 (8-week session)

- **MAY 1**: Registration for all students begins
- **JUN 22**: Classes begin
- **AUG 14**: Summer Term ends

## First 4-week Session

- **JUN 22**: Classes begin
- **JUL 17**: First 4-week Session ends

## Second 4-week Session

- **JUL 20**: Classes begin
- **AUG 14**: Second 4-week Session ends

* Instructor and adviser permission required on or after the third day of classes.

Additional calendars can be viewed at [www.oit.edu](http://www.oit.edu).
Oregon Institute of Technology is Oregon’s only public university with a mission to deliver technology education throughout the Pacific Northwest. We partner with business and industry leaders to ensure our programs adapt to new technologies and workforce demands. This real-world focus gives our students a competitive edge: 98 percent are employed or in graduate school within six months of graduation. Many have offers before graduation. Year after year, our baccalaureate graduates command starting salaries that surpass all other public universities in the state.

Our applied approach to teaching, which blends theory and practice, is the main reason our alumni are so avidly recruited. From accounting to robotics to dental hygiene, OIT students have amazing opportunities to apply what they learn in lab-based classes, in clinics and workplaces through externships, by helping community groups through cooperative-education experiences and the capstone senior project—the culmination of your undergraduate education in which you integrate and apply what you have learned to a single problem or issue.

This practical focus is reinforced in the classroom by instructors who worked in the fields they teach before joining our faculty. And in every program, major studies are underscored by a general-education core that broadens students’ understanding of the world and teaches them to communicate effectively, solve problems and think for themselves.

At OIT, you’ll find a robust university atmosphere personalized by individual interactions with professors and staff. An enrollment of about 3,300 allows us to create an intimate campus environment distinguished by small classes and a student-to-faculty ratio of 15:1. This personal approach provides many benefits of a prestigious private education at a public university price. We also have devised special learning communities and seminars to smooth your transition to university life and to ensure your academic and personal success.

Established in 1947, OIT offers associate, bachelor’s and master’s programs at our main campus in Klamath Falls and in partnership with The Boeing Company in Seattle and a growing cadre of educational and health care organizations throughout the region. We also offer degree-completion programs geared toward busy professionals in two Portland locations and through online delivery. OIT, a public, state-supported university belonging to the Oregon University System, is accredited by the Northwest Commission on Colleges and Universities. Our individual programs also are accredited by the appropriate professional organizations.

Most OIT classes are taught at our main campus in Klamath Falls. Nestled on the eastern slope of the Cascade Mountains, the 190-acre campus offers spectacular views of Upper Klamath Lake, pine-studded knolls and snow-capped peaks from nearly every building (13, including a residence hall). Klamath Falls, a city of about 20,000 residents (45,000 in the urban growth area), is located in south-central Oregon, about 20 miles from the California border. Known as Oregon’s “City of Sunshine,” Klamath Falls enjoys about 300 days of blue skies each year.

From whitewater rafting on the Klamath River, to spelunking at Lava Beds National Monument, to seven National Wildlife Preserves and magnificent Crater Lake, the region boasts dramatic and varied landscapes, vistas and experiences. Superlative spots for fishing, golf, skiing, hiking, backpacking and horseback riding are just minutes from campus along the Volcanic Legacy Scenic Byway.

Those more drawn to cultural pursuits than outdoor recreation will find a lively scene in Klamath Falls that includes galleries, museums, a symphony orchestra, local theater and the top-rated Ross Ragland Theater, showcasing national and regional acts as well as community productions. The Oregon Shakespeare Festival and the Britt Festival offer world-class summer entertainment just 90 minutes away.

Here in Klamath Falls, you’ll also find 22 parks, a sports complex, a top-ranked skateboard park, roller and ice-skating rinks, bowling alleys, video arcades, billiard parlors, cafes, antique shops, pizza parlors, fast food venues, restaurants, coffee houses and a cinema that shows first-run movies on 10 screens.
Essential Learning Outcomes for OIT Students

OIT students will demonstrate these institutional student learning outcomes:

- Effective oral, written and visual communication
- The ability to work effectively in teams and/or groups
- An understanding of professionalism and ethical practice
- Critical thinking and problem solving
- Lifelong and independent learning skills
- Mathematical knowledge and skills
- Scientific knowledge and skills in scientific reasoning
- Cultural awareness

Degree Programs

Master of Science
- Manufacturing Engineering Technology

Bachelor of Science
- Allied Health Management
- Applied Mathematics
- Applied Psychology
- Biology
- Civil Engineering
- Clinical Laboratory Science (joint degree with OHSU)
- Communication Studies
- Computer Engineering Technology
- Dental Hygiene
- Diagnostic Medical Sonography
- Echocardiography
- Electrical Engineering
- Electronics Engineering Technology
- Embedded Systems Engineering Technology
- Environmental Sciences
- Geomatics, with options in:
  - Geographic Information Systems Surveying
- Health Sciences
- Information Technology, with options in:
  - Accounting
  - Applications Development
  - Business/Systems Analysis
  - Health Informatics
- Management, with options in:
  - Accounting
  - Entrepreneurship/Small Business Management
  - Marketing
- Manufacturing Engineering Technology
- Mechanical Engineering
- Mechanical Engineering Technology
- Nuclear Medicine Technology
- Nursing (through Oregon Health & Science University, School of Nursing)
- Operations Management
- Radiologic Science
- Renewable Energy Systems
- Respiratory Care (online degree completion)
- Software Engineering Technology
- Vascular Technology

Associate Degrees

Associate of Applied Science
- Dental Hygiene
- Emergency Medical Technology–Paramedic (joint degree with OHSU)
- Polysomnographic Technology
- Respiratory Care

Associate of Engineering
- Computer Engineering Technology
- Software Engineering Technology
History at a Glance

July 14, 1947 – Under the direction of Winston Purvine, the first classes were held in a deactivated World War II Marine Corps hospital three miles northeast of Klamath Falls.

1951 – KTEC radio went on the air.

1953 – Associate degree programs in the Surveying and Structural Engineering Technologies were first accredited by the Engineers’ Council for Professional Development.

1956 – KOTI television opened on campus.

1957 – The Institute was made a separate division of the State Board of Education and an engineering study was begun to determine whether to repair or rebuild the facilities.

1960 – The Institute was transferred to the jurisdiction of the State Board of Higher Education.

1962 – The Institute was accredited by the Northwest Association of Secondary and Higher Schools.

1964 – The campus moved to newly constructed buildings on a geothermal site overlooking Upper Klamath Lake.

1966 – The Institute received authorization to grant bachelor’s degrees.

1970 – Bachelor’s degree programs first accredited by ABET.

1975 – Geo-Heat Center established.

1976 – Kenneth Light appointed President upon Purvine’s retirement.

1983 – Larry Blake appointed President and the Metro Center was established in Portland.

1984 – Small Business Development Center established.

1988 – Portland Metro Center moved to its first permanent facilities on Southeast Harmony Road near Clackamas Town Center.

1989 – State Board authorized OIT to grant master degrees.

1991 – Lawrence J. Wolf appointed President.

1995 – Master’s degree first offered.

1998 – Martha Anne Dow appointed President.

2001 – Oregon Renewable Energy Center established.

2005 – Oregon Center for Health Professions established.

Campus Map

1. Snell Hall
   Administrative Offices, Cashier, Human Resources, Registrar

2. College Union
   Admissions, ASOIT, Bookstore, Financial Aid, Campus Dining, Information, Meeting Rooms, Post Office, Student Affairs

3. Residence Hall

4. Athletics
   Gymnasium, Pool, Fitness Center

5. Learning Resource Center
   Career Services, Center for Learning and Teaching, Counseling and Testing, Library, Media Services/Offices, Shaw Historical Library, Television Studio

6. Owens Hall
   Classrooms, Laboratories, Offices

7. Semon Hall
   Classrooms, Dental Clinic, Laboratories, Offices, Student Health Center

8. Boivin Hall
   Classrooms, Computing Services, Geo-Heat Center, Offices, Small Business Development Center

9. Purvine Hall
   Classrooms, Laboratories, Offices

10. Cornett Hall
    Classrooms, Laboratories, Offices

11. John F. Moehl Stadium
    and Track Facility

12. Facilities Services
    Central Receiving

13. Information Center
    Disabled Parking Information, Temporary and Visitor Parking Permits, Campus Security

14. University Advancement
    Oregon Tech Foundation, Alumni Relations

15. Martha Anne Dow Center for Health Professions
    Classrooms, Laboratories, Offices

16. Miller Hall
Notes
Admissions and Financial Aid
Office of Admissions

John Duarte, Director of Admissions
Ginny Gardiner, Assistant Director
Abbie Allen, Admissions Associate (Portland East)
Pamela McIntire, Admissions Counselor
Brenda Musgrove, Admissions Counselor
Carleen Drago, Student Services Specialist (Portland West)
Kathy Starkey, Office Manager
Deborah Brainard, Campus Visit Coordinator

College Union, 1st Floor
(541) 885-1150
(541) 885-1024 - fax
oit@oit.edu

The OIT Admissions Office is located on the first floor of the College Union on the Klamath Falls campus. Open weekdays from 8 a.m. to 5 p.m., its primary functions are to help prospective students investigate and evaluate OIT, to manage applications for admission and to assist applicants with the enrollment process. The Admissions Office operates with the cooperation and support of the entire campus community.

Those interested in seeing the Klamath Falls campus should contact the Admissions Office. A visit coordinator can arrange meetings with a faculty member and admissions counselor, plan a tour of the residence hall and entire campus, schedule an appointment to chat with a coach or sit in on a class. To set up a campus visit, call (800) 422-2017, ext. 1. Hearing impaired persons may call the TTY number (541) 885-1072. Request a campus visit online at www.oit.edu/visit. To visit one of OIT’s other sites, contact the Admissions Office to receive appropriate contact information.

Application Procedures
All students who wish to take more than eight credits in a term, receive financial aid and/or graduate from OIT, must apply and be accepted for admission. OIT strongly encourages students to submit all application materials nine to 12 months in advance of the term enrollment is scheduled to begin. At a minimum, all documents should be filed at least one month prior to enrollment. Every applicant must complete the following steps:

1. Complete the Application for Admission and submit it to the Admissions Office. Note: Apply online at www.oit.edu/apply.
2. Submit the $50 non-refundable application fee. Checks or money orders should be made payable to OIT.
3. Those applicants who have earned fewer than 36 college credits must have official SAT I or ACT scores sent to OIT. Some applicants who graduated from high school three or more years ago may be exempted from this requirement by permission of the admissions director.
4. Have official transcripts from all post-secondary institutions previously attended, or received credit from sent directly to the OIT Admissions Office. Any offer of admission is contingent upon the submission of satisfactory final transcripts prior to enrollment at OIT.
5. Have official high school transcripts or GED test results sent directly to the OIT Admissions Office. High School records are not required from applicants who graduated prior to 1997 and who have earned at least 36 college credits. Applicants who are currently enrolled in high school may be admitted on the basis of six or more semesters of high school work provided that they will have met the 14 subject re-
requirements at the time of high school graduation. In any case, each student's final official high school transcript must be provided upon graduation to complete the admission process.

6. Have official Advanced Placement (AP) score reports sent to the OIT Admissions Office, if applicable.

Some programs at OIT do not have sufficient space to enroll all qualified applicants who seek admission. In these cases, OIT reserves the right to offer admission to the most qualified applicants, on a first-come, first-served basis or through a combination of the two strategies.

Upon admission and prior to registration, a completed health form showing evidence of adequate immunizations must be on file with OIT’s Student Health Center. For further information, see the Student Health Center section of this catalog. Students are not required to submit these forms if taking five or fewer credits per term.

If a student fails to submit the required documents in complete and satisfactory order, admission and registration may be cancelled. All records become the property of OIT.

Social Security Number Disclosure and Consent Statement

Students are requested to provide voluntarily a Social Security Number (SSN) to assist OIT and the Oregon University System (and organizations conducting studies for or on behalf of OUS) in developing, validating or administering predictive tests and assessments; administering student aid programs; improving instruction; internal identification of students; student parking; collection of student debts; or comparing student educational experiences with subsequent workforce experiences. When conducting studies, OUS will disclose a student's Social Security Number only in a manner that does not permit personal identification by individuals other than representatives of OUS (or the organization conducting the study for OUS) and only if the information is destroyed when no longer needed for the purposes for which the study was conducted. By providing your Social Security Number, students consent to the uses identified above. This request is made pursuant to ORS 351.070 and 351.085. Provision of a Social Security Number and consent to its use is not required and, if a student chooses so, will not be denied any right, benefit or privilege provided by law. Students may revoke consent for the use of a Social Security Number in these ways at any time by writing to: Office of the Registrar, OIT, 3201 Campus Dr., Klamath Falls, OR 97601.

However, OIT is required to obtain a Social Security Number in order to file certain returns with the Internal Revenue Service (IRS) and to furnish a statement to you. The returns that OIT must file contain information about qualified tuition and related expenses. Privacy Act Notice: Section 6109 of the Internal Revenue Code requires students to give a correct SSN to persons who must file information returns with the IRS to report certain information. The IRS uses the SSN for identification purposes and to help verify the accuracy of tax returns. For more information, refer to IRS code 6050S.

Admission Procedures

Freshman Admission

For admission to freshman standing, students must meet entrance requirements adopted by the State Board of Higher Education in Oregon. Applicants who are enrolled in or have graduated from regionally accredited high schools must:

1. Submit an official high school transcript. An unweighted cumulative high school grade point average of 3.00 is required for admission. Applicants with a GPA between 2.50 and 2.99 may qualify for admission provided they submit adequate SAT Reasoning Exam scores or ACT scores.

2. Submit results from either the SAT Reasoning Exam, SAT I or ACT. Applicants may submit scores from SAT I or ACT tests taken prior to March 2005; but applicants taking the tests after that time must also submit results from the SAT Writing test or the optional ACT Writing exam.

a. Applicants with an unweighted cumulative high school grade point average of 3.00 or better do not need to meet a minimum SAT or ACT score.

b. Applicants with an unweighted GPA of 2.75 to 2.99 need to submit combined SAT Reasoning Exam scores of 800 or better on the Critical Reading (formerly called Verbal) and Math tests with a score of at least 400 on the Math portion of the SAT. Those submitting ACT results must have an ACT Math score of at least 17 and a Composite score of at least 17.

c. Applicants with an unweighted GPA of 2.50 to 2.74 need to submit combined SAT Reasoning Exam scores of 1000 or better on the Critical Reading (formerly called Verbal) and Math tests with a score of at least 500 on the Math portion of the SAT. Those submitting ACT results must have an ACT Math score of at least 21 and a Composite score of at least 21.

3. Applicants must satisfactorily (with grades of C- or above) complete at least 14 units (one year is equal to one unit) of college preparatory work in the following areas, unless they graduated from high school prior to Spring 1985.

a. English (4 units). Shall include the study of the English language, literature, speaking and listening, and writing, with emphasis on and frequent practice in writing expository prose during all four years.

b. Mathematics (3 units required, 4 strongly recommended). Shall include first-year algebra and two additional years of college preparatory mathematics such as geometry, probability and statistics, trigonometry, finite mathematics, advanced applications, calculus, and probability and statistics, or courses that integrate topics
from two or more of these areas. This coursework must include Algebra II (or equivalent) or higher level mathematics. Algebra and geometry taken prior to ninth grade will be accepted.

c. Science (2 units required, 3 recommended). Shall include a year each in two fields of college preparatory science such as biology, chemistry, physics, or earth and physical science. It is strongly recommended that at least one year be taken as a laboratory science.

d. Social Studies (3 units). Shall include analysis of societal issues and events. It is strongly recommended that study includes knowledge and use of geographic information, patterns of United States history, patterns of human history, structures, systems of U.S. Government, and analysis of economic systems.

e. Second Language (2 units). Shall include two years of the same high school-level second language, or a "C" or above in the third year of a high school-level language, or two terms of a college-level second language with a grade of "C-" or above, or satisfactory performance on an approved assessment of second language proficiency. Courses in American Sign Language can meet this second language requirement. The second language requirement only applies to applicants graduating from high school after 1996. Applicants who are admitted by exception, without having met the Second Language requirement, must satisfactorily complete at least two terms of study in a second language prior to graduation from OIT.

Applicants who are unable to meet the 14 subject requirements may be eligible for admission by earning an average score of 470 or above (940 total) on two College Board SAT Subject Tests (in Math level I or IIC and another test of the student's choice). Students who do not take a SAT Subject test in a second language must prove language proficiency through another approved process.

Applicants who have not graduated from high school and who are applying on the basis of GED scores must submit test results showing a minimum composite score of 580 (58 on GED exams administered prior to 2002) with a minimum score of 410 on each GED subtest (41 on subtests administered prior to 2002). Applicants whose GED scores fall below these standards may qualify on the basis of a combination of GED and SAT Reasoning or ACT exam results:

1. Applicants with GED composite scores of 550 to 570 (55 to 57 on tests administered before 2002) need to submit combined SAT Reasoning Exam scores of 800 or better on the Critical Reading (formerly called Verbal) and Math tests with a score of at least 400 on the Math portion of the SAT. Those submitting ACT results must have an ACT Math score of at least 17 and a Composite score of at least 17.

2. Applicants with GED composite scores of 500 to 540 (50 to 54 on tests administered before 2002) need to submit combined SAT Reasoning Exam scores of 1000 or better on the Critical Reading (formerly called Verbal) and Math tests with a score of at least 500 on the Math portion of the SAT. Those submitting ACT results must have an ACT Math score of at least 21 and a Composite score of at least 21.

Public high school students must graduate from a standard or regionally accredited high school. Private high school students must graduate from regionally accredited high schools. Home educated students and graduates of unaccredited or non-standard high schools, as well as applicants who fail to meet the 14 subject requirements, may be admitted by submitting SAT Reasoning Exam score of 1000 on the Math and Critical Reasoning sections combined and 470 on the Writing test or an ACT composite score of 21 or better and submitting an average score of 470 or above (940 total) on two College Board SAT Subject Tests (Math level I or IIC and another test of the student's choice). An examination in a second language is strongly recommended to qualify the applicant for admission by meeting the language proficiency requirements. Students who do not take an SAT Subject test in a second language must prove language proficiency through another approved process.

The Admission Committee and the Director of Admissions retain the right to make exceptions to these requirements or add stipulations to certain offers of admission. For additional information, contact the Director of Admissions.

Transfer Admission

A transfer student is one who has previously earned credits at another regionally accredited institution of higher education. A student must have earned at least 36 college-level credit hours (24 semester credits) to be admitted on the basis of his/her college record alone.

- Transfer applicants must have a cumulative 2.25 GPA or better in college-level classes unless they hold an associate’s or bachelor’s degree already, in which case, only a cumulative 2.0 GPA is required.

- In order to be admitted to OIT, transfer applicants must demonstrate proficiency in English and Math. One way to do this is by completing Math 95 Intermediate Algebra (or higher) and WRI 115 Introduction to Writing (or higher) with grades of “C-” or better.

- Applicants who do not have an Associate’s or Bachelor’s degree must have at least 33 college-level credits that are not in Physical Education. If more than 10 percent of an applicant’s credits are in Physical Education, those credits in excess of 10 percent may not be calculated in his or her cumulative college GPA.
Official transcripts from all postsecondary institutions must be submitted for consideration. Applicants who graduated from high school after 1996 must also submit official high school transcripts, unless they have completed two terms of college-level study in a second language.

Applicants with fewer than 36 term credit hours or who have not completed the math and writing course requirements must also provide high school transcripts or GED scores. Admission will be based on both high school and postsecondary records.

A Transfer Evaluation Report acknowledging the courses accepted by the university will be sent after admission status has been confirmed. Acceptance of vocational/technical courses may be granted after registration if the student’s administering department finds that vocational/technical courses have satisfied certain bachelor’s degree requirements. In all cases, course and/or department prerequisites will be enforced.

Non-Admit Students
A non-admit is a student who wishes to take less than nine credit hours per term at OIT, is not seeking a degree from OIT and has never been fully admitted to OIT in the past. A non-admit is not eligible for financial aid. College-level classes taken while in non-admit status may be used toward OIT graduation requirements upon completion of the full admission process or may be transferred to other institutions. To enroll at OIT as a non-admit, submit the Non-Admit Application Form to the Admissions Office, preferably at least one week prior to enrollment. OIT reserves the right to deny enrollment opportunities to those who seek non-admit status.

Admission to Programs
Having Clinical or Practicum Requirements
It is important that prospective students understand that admission to those programs that have clinical or practicum requirements:
1. Is selective;
2. Will be granted after consideration of an applicant’s ability to assume professional responsibility for clients, patients or students served by the program; and
3. May be denied to any student with a record of past criminal behavior or psychiatric illness, which bears upon the student’s ability to fulfill clinical or practicum responsibilities.

International Student Admission
International students play an important role in campus life, and the Admissions Office is available for admission assistance.

In applying for admission, send the following to the Admissions Office:
1. An International Student Application for Admission accompanied by a $50 (U.S.) non-refundable fee.
2. Official transcripts, in English or with an accompanying official translation, of all high school and post-high school institutions attended.
3. Official test scores on the Test of English as a Foreign Language (TOEFL). A minimum score of 520 (or 190 on the computer-based TOEFL or 68 on the Internet-based TOEFL) is required for consideration.
4. A completed International Student Declaration of Finances form, indicating that you have the necessary financial resources in U.S. dollars to support yourself while enrolled.
5. A letter, if appropriate, from parents and/or sponsors indicating the amount of financial support they will provide in U.S. dollars.
6. Documentation showing that you, your parents and/or your sponsors have adequate financial resources to meet your expenses while enrolled at OIT. Examples include official bank statements, tax forms and letters of employment showing annual earnings.
7. An official credential evaluation from an OIT-approved credential service for all coursework completed at a postsecondary institution outside the United States. Examples include the Association of Collegiate Registrars and Admissions Officers (http://www.aacrao.org/ international/foreignEdCred. cfm) and World Education Services (www.wes.org).

A completed health history and immunization form and proof of adequate health and accident insurance also must be submitted. In addition to the health requirements that need to be fulfilled before registration, international students must have at least one documented MMR vaccine on file at the Student Health Center prior to the student attending any classes (per OAR 333-050-0130, ORS 433.282 and ORS 433.284). Refer to Student Health Center section of this catalog for health history and immunization requirements.

Admissions with Special Conditions
If a student is admitted with one or more stipulations and fails to meet any of the prescribed condition(s), that student may be referred to the Academic Progress & Petitions (AP&P) Committee for possible academic disciplinary action, up to and including probation and suspension from the university. The request for review by AP&P can be made by any member of the Admission Committee.
ROAD (Registration, Opportunity and Discovery)
Registration for new students occurs in the summer and at the beginning of each term. In addition to placement testing and meeting with advisers to plan an academic schedule, students have the opportunity to register for classes, set up OIT computer and e-mail accounts, purchase books and receive a university ID card. Students are encouraged to attend ROAD during the summer, rather than waiting to register just prior to the beginning of Fall term. Details of orientation activities are sent to all incoming students prior to the term. Fall term orientation is a comprehensive program that assists new students in a successful transition to university. The program involves workshops, forums and activities. Workshops addressing stress, time- and money-management are offered, as well as forums for students of color, non-traditional students and students with disabilities. Activities such as canoeing, rafting and rock-climbing instruction supplement the orientation and provide the opportunity to meet new people. Also offered are introductions to the various labs and departments on campus, such as the library, computer lab, fitness center and residence hall. Orientation also is designed to give new students a chance to meet and socialize with their professors before classes get underway. Orientation for Winter and Spring terms is condensed.

Placement Examinations
All entering students must take a mathematics examination for placement into mathematics courses. Students who have earned college credit in calculus or who have completed the math requirements for their major are exempt.

All entering students with fewer than 36 transferable college credits must take a reading assessment. Students who have earned college-level credit in writing are exempt from needing to take the writing-placement exam.

Placement tests are available prior to the term of entry and in conjunction with new student registration. For more information, contact the Center for Learning and Teaching at (541) 885-1015.

Financial Aid Programs and Application Process
Tracey Lehman, Director
College Union
(541) 885-1280
dollars@oit.edu

The Financial Aid Office is committed to providing high-quality service to all students, their families and the community. As part of that commitment, the office strives to provide information that is accurate, easy to understand and enables students to make decisions regarding educational funding.

The information contained in this catalog is general in nature and is not meant to serve as notification of students’ rights and responsibilities as financial-aid recipients. OIT’s Financial Aid Award Guide serves that purpose and is sent to all financial aid recipients with their first award letter. It is also available on our Web site at www.oit.edu/aid. Additional questions regarding the application process should be directed to the Financial Aid Office.

Federal law mandates that all students applying for financial aid complete the Free Application for Federal Student Aid (FAFSA) available at www.fafsa.ed.gov. A federally approved needs-analysis methodology is applied consistently to information provided by all applicants. The philosophy behind financial aid is that parents and students have the primary financial responsibility for funding the student’s education.

If there are unusual financial circumstances that are not accurately reflected on the FAFSA, the student should contact the Financial Aid Office. Under certain conditions, professional judgment may be used and aid eligibility recalculated. The Financial Aid Office will always take the student’s best interest into consideration while, at the same time, upholding federal regulations.

Application Procedures/Priority Deadlines
All students applying for federal and state aid must complete the Free Application for Federal Student Aid (FAFSA) and list OIT’s school code (003211). Feb. 1 is OIT’s priority deadline. FAFSA information must be submitted to the federal processor and a valid ISIR processed by that date in order for students to be considered for their maximum eligibility. Students who file after that date will still have eligibility; however, funds are limited and may be expended by that priority date.

Once the FAFSA information is received and reviewed by the Financial Aid Office, an Offer of Financial Aid (award letter) and an Award Guide are mailed to the student. Admitted students can view their award letters online at Web for Student, which may be found at www.oit.edu/aid. Students may accept their aid online and request changes. Please log in to Web for Student to do so. Only the initial award letter is sent in paper form. Any updates to award letters will result in an e-mail to the OIT student e-mail account. If additional information is requested, such as tax returns, students should return the documents as soon as possible to receive an Offer of Financial Aid. The award letter will list all types of aid for which the student is eligible. The Award Guide is a detailed booklet explaining programs, disbursement procedures and student rights.
and responsibilities, as well as cost estimates and other miscellaneous information. It is the student’s responsibility as a financial aid recipient to become familiar with the contents of the Award Guide and contact the Financial Aid Office if additional questions or concerns arise. Additionally, students should check their OIT e-mail accounts for announcements and notifications from Financial Aid.

The FAFSA must be filed for each year a student wishes to be considered for financial aid eligibility.

**Types of Aid**

All federal and state programs are need-based with the exception of the Unsubsidized Stafford Loan and the Parent Loan for Undergraduate Students (PLUS). Students receiving federal aid are allowed to receive at maximum the cost of attendance as determined by the Financial Aid Office through all aid programs, including outside benefits such as VA and Voc Rehab. Individual financial-aid packages will vary based on determined cost of attendance, expected family contributions and outside resources.

**Federal Pell Grants**

The maximum annual Pell Grant for 2008-09 is $4,731 for full-time students attending three terms. Students may receive Pell Grants as long as they are attending at least half time (6 credits), but the grant will be prorated accordingly. Pell Grant eligibility is limited to those students who have not yet obtained a bachelor’s degree. All students will be considered for Pell Grant eligibility if they file a FAFSA. Awards are granted based on the federally calculated expected family contribution (EFC).

**Oregon Opportunity Grant**

The maximum annual Oregon Opportunity Grant for 2008-09 is approximately $3,200. This grant program provides funds to Oregon resident undergraduate students attending Oregon schools. The Oregon Opportunity Grant has a shared responsibility model. Students not enrolled full time (at least 12 credits) may be eligible for a part-time award if attending half time. By filing a FAFSA, students are applying for this grant. Funds are available on a first-come, first-served basis and are generally available to those who qualify. A student can receive an Oregon Opportunity Grant for a maximum of 12 terms. More information is available at— www.getcollegefunds.org.

**Federal Supplemental Educational Opportunity Grants (SEOG)**

SEOG funds are very limited at OIT. Although priority for SEOG funds is given to full-time students, OIT may, on a case-by-case basis, award SEOG funds to students enrolled at least half time. The typical award is $300 for an academic year. Only students who have not yet completed a bachelor’s degree and are eligible to receive a Pell Grant will be considered for this grant.

**Federal Perkins Loan**

The Federal Perkins Loan Program has no origination or guarantee fees, a nine-month grace period after a student ceases to be enrolled at least half time before repayment begins and an interest rate of five percent that begins at repayment. Awards at OIT range from $1,000 to $4,000 per year and are based on need. Priority is given to students who are attending full time, but may also be awarded on a case-by-case basis to students attending part time.

**Federal Work-Study Program**

The Federal Work-Study Program allows students to earn money by working part time on campus or at an off-campus community service site. Information regarding available jobs and application procedures are located in the Career Services Office and on the OIT Web site. Awards are usually $1,500 per year, which can be earned at any time during the academic year provided the student is enrolled at least half time.

**Academic Competitive Grant (ACG)**

The Academic Competitive Grant (ACG) is a Federal program targeted to Pell Grant-eligible students in their first two academic years. Recipients must meet very specific eligibility criteria related to citizenship, enrollment status, rigor of high school curriculum, high school graduation date, and in the case of second year students, GPA. These grants range from $750 to $1,300 per year.

**National Science and Mathematics Access to Retain Talent Grant (SMART)**

The National Science and Mathematics Access to Retain Talent Grant (SMART) is a federal grant program targeted to third- and forth-year Pell Grant-eligible students majoring in mathematics, science, technology, engineering or critical foreign language (as defined by the U.S. Department of Education). In addition to maintaining a 3.0 GPA, recipients must meet very specific eligibility criteria related to citizenship and enrollment status. Grant amounts can be up to $4,000 per year.

**Federal Family Education Loan Programs (FFELP)**

Federal Stafford Loans (subsidized and unsubsidized) are available to most students. A list of our suggested lenders is available in the Award Guide, by contacting the Financial Aid Office, and lenders, as well as a student loan search engine, are located on the financial-aid Web site at www.oit.edu/faid. While OIT may suggest lenders, students may choose any lender participating in the FFELP Program. Loan amounts vary based on student need and grade level in a declared major at OIT. A guaranteed and origination fee may be taken at the time of disbursement. Contact the OIT Financial Aid Office for most recent interest rates for loans. The only difference between a subsidized and an unsubsidized loan is that the federal government pays the interest on subsidized loans while the student is in school and during the six-month grace period. Students
who wish to borrow through the unsubsidized loan program should remember that interest is accruing on the loan. Interest payments can be made while in school and during the grace period, but are not required. Any interest that has accrued at the time of repayment will be capitalized.

**Federal Parent Loans for Undergraduate Students (PLUS)**

Parents of dependent students can apply for funds through PLUS. Loans are available for up to the cost of attendance minus other financial aid and resources each year. Interest begins to accrue immediately. Like the student loan, a four percent origination and guarantee fee may be taken at the time of each disbursement, but repayment begins 60 days after the final disbursement of the academic year. A list of suggested lenders and additional information is available in the Award Guide and online at www.oit.edu/faid. Some lenders will allow interest payments only while the student is in school at least half time.

**Presidential Scholarships**

First-time freshman applicants and transfers will receive consideration for Presidential Scholarships by applying and being accepted for admission by Feb. 1 for the following Fall term and meeting the minimum scholarship requirements. Transfer students qualify on the basis of their college GPA. These scholarships are for full-time students only and may be renewed for up to four years. Award levels vary depending on each recipient’s academic record. For more information, call the Admissions Office at (541) 885-1150 or write to oit@oit.edu.

**Klamath County Recognition Scholarship**

The Klamath County Recognition Scholarship is automatically awarded to any applicant living in Klamath County who will attend OIT starting the Fall term after graduation from high school and who is able to meet two of three criteria: an unweighted high school cumulative GPA of 3.0 or better; top 25 percent rank in class; and/or a composite SAT I score of at least 1,000 (21 ACT). To qualify, students must simply apply for admission, meet all admission requirements and be accepted for admission by Feb. 1 for enrollment Fall term. Recipients must be new full-time undergraduate students at OIT. This scholarship is valued at $500 and is not renewable. It may not be combined with the Dean’s Academic Scholarship.

**Oregon Institute of Technology**

**Budgets for 2008-09**

**Standard Budgets for Fall, Winter, Spring for Full-Time Students**

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<tr>
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<th>On-Off Campus</th>
<th>With Parent</th>
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<tr>
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<th>On-Off Campus</th>
<th>Non-Resident</th>
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<td>Fees</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td>$28,042</td>
<td></td>
</tr>
</tbody>
</table>

- Tuition is based on 14 credits, 08-09 carrying load (based on a 3.2 percent increase over 07-08)
- Fees based on full time credits, include tech fee, building fee, incidental fee, $101 health services fee each term, $26 basic health insurance each term and one - $150 resource fee
- Budget is based on $440 per month rent, $252 per month food and $130 per month utilities for off-campus students, (or single room with 5 percent increase over 07-08, mid meal plan with a 3 percent increase over 07-08)
- Miscellaneous expense includes medical supplies, entertainment, personal care products, housekeeping supplies, travel and transportation
- CLS/PAR, RCP and Dental Hygiene LaGrande have a different budget, please see OUS fee book
- If requested may add first time matriculation fee
- MIT Externs have a different budget, major medical, internet and extra credits added to budget
- Child Care maximums are: infant/toddler $624 month, preschool $453 month and school age $179 month
- Single parent- may double budgeted housing with documentation
- Health classes have higher fees, may add actual fees if requested by student
- Budget increase for computer is $1,500 maximum with documentation

**Oregon Tech Foundation Scholarships**

More than 150 new and returning students annually receive scholarships from the more than 100 scholarships administered by the Oregon Tech Foundation. Alumni, businesses, industry, and friends of OIT generously fund these scholarships. To receive consideration, students must be currently enrolled at OIT or accepted for admission for the following Fall term, and must submit an application. Application forms and
deadlines are available on the OIT Web site at www.oit.edu/otfscholars. The online scholarship application process is seamless for students and automatically generates a list of scholarships the student is eligible to apply for. The application process opens Dec. 1 and has a deadline of Feb. 1. For more information about scholarship opportunities, please visit www.oit.edu/otfscholars.

Leadership and Diversity Scholarships
To be considered for the LAD Scholarship, students must submit the scholarship application (available from the Admissions Office) and the required essay. Students also should provide at least one letter of recommendation from a teacher, counselor, clergy or other appropriate reference. Candidates must be current OIT students or have been accepted for admission for the following Fall term and submit all scholarship materials by Feb. 1. Scholarship materials should be directed to the Admissions Office. For more information, call (541) 885-1150.

Estimated Financial-Aid Budgets for 2008-09 Academic Year
Financial-aid budgets can include amounts for tuition and fees, books and supplies, room and board and miscellaneous expenses. Please remember that these are estimated average costs for students, and student spending habits will vary. On a very limited, case-by-case basis, the Financial Aid Office may be able to adjust a student’s budget as permitted by federal regulations.

Students With Disabilities
Under certain circumstances, a student’s aid package may be adjusted to reflect additional expenses. Please contact the Financial Aid Office if you would like additional information or to schedule an appointment.

Consortium Agreement Information
OIT’s Financial Aid Office will process a consortium agreement with another school in order to allow a student taking courses at another institution to receive aid from one school for all eligible classes. The institution that will be awarding the degree and awarding financial aid is defined as the “home institution”; the “host institution” is defined as the institution from which the student is taking additional courses.

When OIT is serving as the “home institution,” the following criteria must be met to have classes at a “host institution” apply toward financial aid:

1. The student must be fully admitted to one of OIT’s degree-granting programs and eligible for financial aid.
2. The student must be enrolled at least half-time (6 credits) at OIT.
3. The classes taken at the host institution must be 100-level or higher.
4. The classes at the host institution must apply toward the student’s OIT degree.
5. The classes taken at the host institution must not be offered by OIT during the term of enrollment.

It is the student’s responsibility to ensure that both the “host” and the “home” institutions complete the appropriate consortium agreement. Consortium-agreement forms are available at www.oit.edu/faid under “forms.” Students must provide OIT’s Financial Aid Office with a final grade report from the “host institution” prior to receiving aid for future terms.

The Guide to Oregon Residence Classification

Residence Classification Policy and Procedures
In Oregon, as in all other states, tuition at publicly supported four-year universities is higher for nonresident students than for resident students. The rules used in determining residency seek to ensure that only bona fide Oregon residents are assessed the resident fee. Those rules—Oregon Administrative Rules, Chapter 580, Division 10—Board of Higher Education—appear in Notice to Nonresidents of the State of Oregon.

Only duly authorized residency officers have authority to apply and interpret these rules and procedures. No other indication or determination of residency by any other institutional office, department, program, or staff represents the official institutional determination of residency.

Here is a summary of a few key considerations in determining classification as a resident for tuition purposes:

1. Establishment of a domicile and predominant physical presence in Oregon for a period of 12 months or more prior to the beginning of the term for which residency is sought.
2. Financial dependence on an Oregon resident or financial independence.
3. Primary purpose for being in Oregon other than to obtain an education.
5. Various other indicia of residency (e.g., ownership of Oregon living terms, permanent Oregon employment, payment of Oregon income taxes).

Note: These key considerations are for quick reference purposes only. For a complete explanation of these factors, refer to Oregon Administrative Rules, Chapter 580, Division 10 (See page 19).
To be considered for classification as a resident, certain procedures and materials must be submitted to the institutional residency officer in a complete and timely manner.

1. Obtain and complete the Residence Information Affidavit, which is available from the institutional residency officer.
2. Consult with the residency officer on the provision of all the required supportive documents and materials.
3. Submit the affidavit and all other required materials and documents by the last day to register for the term in which resident status is sought.

Residency Classification Appeals
Any person may appeal an institutional residency classification decision within ten (10) days of the date of mailing or other notification of the decision. The appeal to the OUS Interinstitutional Residency Committee (IRC) must be in writing and filed with the institutional residency officer.

The decision of the IRC may be appealed to the Vice Chancellor for Academic Affairs in writing within ten (10) days of notification of the IRC decision. The decision of the Vice Chancellor is final.

Further Information
Persons interested in further information on or assistance with their OIT residency classification should contact the institutional residency officer, Marla Edge, in the OIT Registrar’s Office or at marla.edge@oit.edu.

Determination of Residence
Oregon Administrative Rules
Chapter 580, Division 10
Oregon Board of Higher Education—
These are the residency rules of the Board of Higher Education currently in effect.

580-010-0029
Definitions
For the purpose of OAR 580-010-0030 through 580-010-0045, the following words and phrases mean:
(1) Domicile is a person’s true, fixed and permanent home and place of habitation. It is the place where a person intends to remain and to which the person expects to return when the person leaves without intending to establish a new domicile elsewhere. In order to establish a domicile in Oregon, a person must maintain a predominant physical presence in Oregon for 12 consecutive months after moving to the state.
(2) A financially independent person is a person who, at the time of application for residency status:
(a) declares himself or herself to be financially independent;
(b) has not been claimed as a dependent during the immediately preceding tax year, and will not be claimed as a dependent during the current tax year, on the federal or state income tax returns of any other person; and
(c) has not received in the immediately preceding calendar year, and will not receive during the current calendar year, one-half or more of his or her support, in cash or in kind, from another person or persons, except for support received from his or her spouse.
(3) A financially dependent person is a person who, at the time of application for residency status:
(a) declares himself or herself to be financially dependent; and
(b) has been claimed as a dependent on the federal and state income tax returns of another person during the immediately preceding tax year.

580-010-0030
Determination of Residence
(1) For purposes of admission and instruction fee assessment, OUS institutions shall classify a student as Oregon resident or nonresident. In determining resident or nonresident classification, the primary issue is a person’s intent in coming to Oregon. Intent is inferred from a person’s conduct and history as they relate to the requirements of these residency rules. If a person is in Oregon primarily for the purpose of obtaining an education, that person will be considered a nonresident. It is possible for an individual to qualify as a resident of Oregon for purposes of voting or obtaining an Oregon driver’s license and not meet the residency requirements established by these rules.
(2) An Oregon resident is a financially independent person who, prior to the term for which Oregon resident classification is requested, has both:
(a) established and maintained a domicile in Oregon as provided under OAR 580-0100029(1) for 12 consecutive months; and
(b) during that period, has been primarily engaged in activities other than those of being a college student.
(3) A student may be considered primarily engaged in educational activities regardless of the number of hours for which the student is enrolled. However, a student who is enrolled for more than 8 hours in any semester or term during the 12-month period referred to in section two of this rule shall be presumed to be in Oregon for primarily educational purposes. Such period of enrollment shall not be counted toward the establishment of a bona fide domicile of 12 consecutive months in this state unless the student proves, in fact, establishment of a bona fide domicile in this state primarily for purposes other than educational.
(4) An Oregon resident is also a financially dependent person who is claimed as a dependent by another person who has both:
(a) established and maintained an Oregon domicile as provided under OAR 580-010-0029(1) for 12 consecutive months; and
(b) during that period, has been primarily engaged in activities other than those of being a college student.
(5) A financially dependent person who is claimed as a dependent by another person who has not established and maintained an Oregon domicile shall be presumed to be a non-resident. This presumption may be overcome by evidence of the student’s long-standing presence in Oregon and demonstration of other factors under OAR 580-010-0031.
(6) The criteria for determining Oregon resident classification shall also be used to determine whether a person who has moved from Oregon has established a non-Oregon residence.
(7) If institution records show that the residence of a student or the person upon whom the student is dependent is outside of Oregon, the student shall continue to be classified as a nonresident until entitlement to resident classification is shown. The burden of showing that the residence classification should be changed is on the student requesting the change.
(8) Notwithstanding section (4) of this rule, a student who is financially dependent on a non-Oregon resident may nonetheless be considered an Oregon resident if the student resides in Oregon for at least 12 consecutive months with a parent or legal guardian who has both:
(a) established and maintained an Oregon domicile under OAR 580-010-0029(1) for 12 consecutive months; and
(b) during that period, has been primarily engaged in activities other than those of being a college student.
580-010-0031
Residency Consideration Factors
(1) The following factors, although not necessarily conclusive or exclusive, have probative value in support of a claim for Oregon resident classification:

(a) Reside in Oregon for 12 consecutive months prior to the beginning of the term for which resident classification is sought and during that period be primarily engaged in activities other than those of a college student;
(b) Reliance upon Oregon resources for financial support;
(c) Domicile in Oregon of persons legally responsible for the student;
(d) Acceptance of an offer of permanent employment in Oregon; and
(e) Ownership by the person of his or her living quarters in Oregon.

(2) The following factors, standing alone, do not constitute sufficient evidence to effect classification as an Oregon resident:

(a) Voting or registration to vote;
(b) Employment in any position normally filled by a student;
(c) The lease of living quarters;
(d) Admission to a licensed practicing profession in Oregon;
(e) Automobile registration;
(f) Public records, for example, birth and marriage records, Oregon driver’s license;
(g) Continuous presence in Oregon during periods when not enrolled in school;
(h) Ownership of property in Oregon or the payment of Oregon income or other Oregon taxes; or
(i) Domicile in Oregon of the student’s spouse.

(3) Reliance upon non-Oregon resources for financial support is an inference of residency in another state.

580-010-0033
Evidence of Financial Dependency
(1) In determining whether a student is financially dependent, a student must provide:

(a) Evidence of established domicile as provided under OAR 580-010-0029(1) of the person claiming the student as a dependent; and
(b) The identification of the student as a dependent on the federal and state income tax returns of the person claiming the student as a dependent. Additional documentation to substantiate dependency during the current calendar year may be required at a later time if deemed necessary by the institution.

(2) A student who provides evidence that he or she is a financially dependent person under these rules shall not be required to establish a 12-month domicile prior to classification of resident status, provided such a student may not be classified as a resident while receiving financial assistance from another state or state agency for educational purposes.

580-010-0035
Residence Classification of Armed Forces Personnel
(1) For purposes of this rule, members of the armed forces means officers and enlisted personnel of:

(a) The Army, Navy, Air Force, Marine Corps, and Coast Guard of the United States;
(b) Reserve components of the Army, Navy, Air Force, Marine Corps, and Coast Guard of the United States;
(c) The National Guard of the United States and the Oregon National Guard.

(2) Notwithstanding OAR 580-010-0030, active members of the armed forces and their spouses and dependent children shall be considered residents for purposes of the instructional fee if the members:

(a) Reside in this state while assigned to duty at any base, station, shore establishment, or other facility in this state; 
(b) Reside in this state while serving as members of the crew of a ship that has an Oregon port of shore establishment as its home port or permanent station; or
(c) Reside in another state or a foreign country and file Oregon state income taxes no later than 12 months before leaving active duty.

(3) An Oregon resident entering the armed forces retains Oregon resident classification until it is voluntarily relinquished.

(4) An Oregon resident who has been in the armed forces and assigned on duty outside of Oregon, including a person who establishes residency under section (2)(c) of this rule, must, within a reasonable time, demonstrate an intent to retain classification as an Oregon resident. Such intent may be shown by returning to Oregon within six months after completing service in the armed forces.

(5) A person who continues to reside in Oregon after separation from the armed forces may count the time spent in the state while in the armed forces to support a claim for classification as an Oregon resident.

(6) The dependent child and spouse of a person who is a resident under section (2) of this rule shall be considered an Oregon resident. “Dependent child” includes any child of a member of the armed forces who:

(a) Is under 18 years of age and not married, otherwise emancipated or self-supporting; or
(b) Is under 23 years of age, unmarried, enrolled in a full-time course of study in an institution of higher learning, and dependent on the member for over one-half of his/her support.

580-010-0037
Residence Classification of Members of Oregon Tribes
(1) Students who are enrolled members of federally recognized tribes of Oregon or who are enrolled members of a Native American tribe which had traditional and customary tribal boundaries that included parts of the state of Oregon or which had ceded or reserved lands within the state of Oregon shall be assessed resident tuition regardless of their state of residence.

(2) For purposes of this rule, the federally recognized tribes of Oregon are:

(a) Burns Paiute Tribe;
(b) Confederated Tribes of Coos, Lower Umpqua and Siuslaw;
(c) Confederated Tribes of the Grand Ronde Community of Oregon;
(d) Confederated Tribes of the Siletz Indians of Oregon;
(e) Confederated Tribes of the Umatilla Indian Reservation;
(f) Confederated Tribes of the Warm Springs Indian Reservation;
(g) Coquille Indian Tribe;
(h) Cow Creek Band of Umpqua Indians;
(i) Klamath Tribes.

(3) For purposes of this rule, the Native American tribes that had traditional and customary tribal boundaries that included parts of the state of Oregon or which had ceded or reserved lands within the state of Oregon are:

(a) CALIFORNIA:
(B) Benton Paiute Tribe;
(C) Big Bend Rancheria;
(D) Big Lagoon Rancheria;
(E) Bridgeport Indian Colony;
(F) Cedarville Rancheria;
(G) Fort Bidwell Indian Tribe;
(H) Hoopa Valley Tribe;
(I) Karuk Tribe of California;
(J) Likely Rancheria;
(K) Lookout Rancheria;
(L) Lytton Rancheria;
(M) Melodundum Band of Tolowa Indians;
(N) Montgomery Creek Rancheria;
(O) Pit River Tribe;
(P) Quartz Valley Indian Community;
begin to accrue. A person possessing a non-immigrant visa classifications: A, E, G, H-1B, H-1C, the spouse or child of a person holding an H-1B or H-1C visa, I, K, L, NATO, O, R, S, T, TN, U, or V. The date of the issuance of a visa for one of these classifications shall be the earliest date upon which the 12-month residency requirements under OAR 580-010-0030 may begin to accrue. A person possessing a non-immigrant or temporary visa that is not identified under this rule shall not be considered an Oregon resident.

580-010-0041

Changes in Residence Classification

(1) If an Oregon resident student enrolls in an institution outside of Oregon and later seeks to re-enroll in an OUS institution, the residence classification of that student shall be re-examined and determined on the same basis as for any other person.

(2) A financially dependent student who is dependent on a person who establishes a permanent Oregon residence as defined in OAR 580-010-0030(2) during a term when the dependent student is enrolled at an OUS institution may register as a resident at the beginning of the next term.

(3) Once established, classification as a resident continues so long as the student remains in continuous academic year enrollment in the classifying institution.

(4) A person who seeks classification as a resident under these rules shall complete and submit a notarized Residence Information Affidavit. The affidavit and all required supportive documents and materials must be submitted by the last day to register for the term in which resident status is sought.

(5) No OUS institution is bound by any determination of residency except by duly authorized officials under procedures prescribed by these rules including timely submittal of the notarized affidavit.

580-010-0045

Review of Residence Classification Decisions by IRC

(1) An interinstitutional residency committee (IRC) is established consisting of the officers determining student residence classification at OUS institutions and a member of the Chancellor's staff appointed by the Chancellor. The member of the Chancellor's staff shall serve as chairperson. A majority of the members of the Committee shall constitute a quorum. A majority of a quorum may make decisions.
Western Undergraduate Exchange

The Western Undergraduate Exchange (WUE) program offers a substantial tuition break to most new OIT students from Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, South Dakota, Utah, Washington and Wyoming. Students who qualify for the WUE program pay OIT tuition at just 150 percent of the in-state tuition rate, resulting in tuition savings in excess of $7,000 per year.

Recipients must take a minimum of 12 credits per term at OIT, exclusive of concurrently enrolled classes at a community college. WUE awarded to freshmen is renewable (up to a total of 12 terms), as long as the recipient continues to make Satisfactory Academic Progress. Transfer students’ eligibility may be prorated. WUE is awarded only upon enrollment as a new student and is not awarded to continuing students who did not receive it when they first started at OIT.

WUE will be awarded on a rolling basis to applicants who are admitted prior to beginning their first term. Students who are offered WUE will be sent a WUE Contract, which must be signed and returned to the Admissions Office by May 1 for the following fall term or within 30 days after receipt of contract, whichever is later.

Reciprocity Agreements

Students from some Northern California counties may be eligible to attend OIT under reciprocity agreements with College of the Siskiyous, College of the Redwoods and Shasta College. Reciprocity can allow selected students to attend OIT at in-state tuition rates. To find out if the community college in your area participates in these reciprocity agreements, contact its Admissions Office directly for further instructions. Each participating college has certain restrictions, which may include the county of the student’s residence, required enrollment for a period of time first at the community college, the student’s major and how many reciprocity permits the college issues.

Tuition and Fees

Jan Lewis, Comptroller and Director of Accounting
Snell Hall, 201
(541) 885-1235
jan.lewis@oit.edu

Fees and deposits in all Oregon state institutions of higher education are charged according to a uniform plan, varying on different campuses according to differences in conditions or nature of coursework offered. The State Board of Higher Education reserves the right to make changes in fee schedules without notice.

Below are listed the estimated fees paid by students regularly enrolled for undergraduate and graduate study. Payment of full-time fees entitles students to use the library, ride the local Basin Transit Service buses, laboratory equipment and materials in courses in which they are registered. Students may receive medical attention from the Student Health Center, use the fitness center (Tech Fit Center) and other student services. No reduction in fees is made for students who do not wish to access these services.

Special Fees

Application Fee (Not refundable)—$50
Must accompany admission application.

Matriculation Fee—$150
A one-time fee assessed to all new and transfer students.

Petition to Graduate Fee—$50

Late Fee Payment, first day—$15
Full-time students paying fees after scheduled payment dates of any term pay a late charge of $15 for the first day and $2 per day thereafter. Maximum late fee is $99.

Late Fee to Add, Drop or Withdraw—$20

Return-of-Check Fee—$20
If institutional charges are met by a check which is returned because of any irregularity for which the student is responsible, a fine will be charged. The late-registration fee will be added to the returned-check charge where the returned check was used to pay tuition and fees.

Special-Examination Fee, per credit—$50
Examination for credit.

Transcripts

One-time fee assessed during first term of attendance—$40
Official Transcripts are issued at no charge. Special Mailing Fee—Actual cost of mailing.
Differential Tuition in Health Programs
Additional 15% tuition for courses unique to Health Professions.

Special Course Fees, per course
Special fees, in addition to regular tuition, are assigned for some courses. These fees are noted in the Schedule of Classes for each term.

SAT I (Scholastic Assessment Test I) Fee—$30
A complete list of special fees is maintained in the OIT Cashier’s Office.

Room and Board Costs
The 2008-09 estimated annual room-and-board costs range from $6,831 to $8,332, depending on room type and amount of food purchased. Room-and-board charges are assessed by the term. Fees are due in accordance with the same fee payment schedule as exists for tuition. Generally, payments are due during the first week of the term.

Senior Citizen Instruction Fee
Per-credit hour: no charge.

Senior citizens are persons age 65 or older. Such persons are authorized to attend classes on a space-available basis. Charges for special materials, if any, are additional. Incidental fee privileges are not provided.

The senior-citizen privilege is extended to persons auditing classes (not seeking credit or working toward a degree).

Tuition and Fee Refunds
Students who withdraw from the university and who have complied with the regulations governing academic withdrawals may be entitled to certain refunds of fees assessed, depending on the time of withdrawal. The refund schedule has been established by the State Board of Higher Education and is on file in the Business Office. Included with the refund schedule is the mandated order in which financial aid must be returned to the appropriate programs for students on financial aid. All refunds are subject to the following regulations:

1. Any claim for refund must be made in writing before the close of the term in which the claim originated.
2. An official notice of withdrawal must be completed and necessary clearance signatures filed with the Registrar’s Office.
3. Refunds in all cases are calculated from the date of receipt of the application for refund or date of withdrawal, and not from the date when the student ceased attending classes, except in unusual cases when formal withdrawal has been delayed through cause beyond the student’s control.

Parking Fees
All student, staff and faculty vehicles must be registered with the Traffic Commission and operated in compliance with Regulations Governing Traffic Control. At the time of vehicle registration, a parking fee will be assessed in accordance with a schedule approved by the State Board of Higher Education and filed with the Secretary of State. Parking permits may be purchased at the Cashier’s Office. Vehicles must be registered by the first day after classes begin. Parking Fees for 2008-09 are:

<table>
<thead>
<tr>
<th>Two-wheeled, Powered Transferable</th>
<th>Students</th>
<th>Faculty/Staff</th>
<th>Vehicles</th>
<th>Permits</th>
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<td>$18/term</td>
<td>on full-year permits</td>
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Library Fines and Charges
The following regulations govern library fines and charges:

1. Books—A fine of 25 cents per day is charged for each item overdue other than reserve books. No charges are made for the first three days late, but a charge of $1 is assessed on the fourth day, plus 25 cents per day thereafter (maximum, $10 each item). Separate charges apply to books borrowed from other libraries.
2. Periodicals—Magazines and newspapers have a $1-per-day charge for each overdue item up to the maximum overdue fine.

See following pages for 2008-09 proposed fee schedules.
## Oregon Institute of Technology
### 2008-09 Academic Year Tuition and Required Fees
#### Undergraduate—Per Term

<table>
<thead>
<tr>
<th>Credit Hours</th>
<th>Undergraduate Tuition</th>
<th>Total Fees</th>
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<th>Total Tuition+Fees</th>
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Each Add'l Credit Hour 108.00 339.00

- Health services is optional for 1-5 credits. If option is exercised, fee is $106 per term.
- $38 of Health Service Fee is for the Health Insurance, 9 or more credit hours.
- OIT East and West Portland students: A $15 per term incidental fee is assessed.
- Full Incidental Fees and Health Service Fees are optional to OIT Portland students through Portland State University at PSU rates.
- Dental students will be assessed a $3 needlestick fee in addition to the Health Service Fee.
- Up to $100 per term resource fee is assessed to students in the Health and Engineering Professions.
- A one-time $150 Matriculation Fee and a $40 Transcript for Life Fee is assessed on all new and transfer students.
- Students in upper-division health curriculums are required to carry medical insurance.
- Tuition is assessed for classes in health program curriculums at $123 per credit.
- Qualified tuition and fees do not include student insurance fees for Tax Relief Act reporting.
## Oregon Institute of Technology

### 2008-09 Academic Year Tuition and Required Fees

#### Graduate—Per Term

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### Each Additional Credit Hour

- Health services is optional for 1-5 credits. If option is exercised, fee is $106 per term.
- $38 of Health Service Fee is for the Health Insurance, 9 or more credit hours.
- OIT East and West Portland students: A $15 per term incidental fee is assessed.
- Up to $100 per term resource fee is assessed to students in the Health and Engineering Professions.
- Students in upper-division health curriculums are required to carry medical insurance.
- A $40 one-time Transcript Fee is assessed to all new and transfer students.
- Qualified tuition and fees do not include student insurance fees for Tax Relief Act reporting.
# Oregon Institute of Technology
## Paramedic Education Program
### 2008-09 Academic Year Tuition and Required Fees—Per Term

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Each Add’l Credit Hour 153.00 197.00

- Students are required to carry OIT’s major medical insurance or a policy approved by OIT.
- An approved policy is available through OIT for $508 for extended insurance plus $38 for basic insurance per term.
- The major medical insurance requirement may be satisfied if the student shows satisfactory proof of equivalent insurance and signs a statement agreeing to keep it in force during the academic period for which the fees are being paid.
- A $40 one-time Transcript for Life Fee is assessed on all new and transfer students.
- Facilities Use, Incidental and Health Service fees are set by OHSU and are subject to change.
- Qualified tuition and fees do not include student health services or insurance fees for Tax Relief Act reporting.
- Students in this program do not pay the Health Professions Resource Fee.
<table>
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<th>Credit Hours</th>
<th>Undergraduate Tuition</th>
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Each Add’l Credit Hour

- Students are required to carry OIT’s major medical insurance or a group policy approved by OIT.
- An approved policy is available through OIT for $508 for extended insurance and $38 for basic insurance per term.
- A $40 one-time Transcript for Life Fee is assessed on all new and transfer students.
- Facilities Use, Incidental and Health Service fees are set by OHSU and are subject to change.
- Qualified tuition and fees do not include student health service fees and insurance fees for Tax Relief Act reporting.
- Students in this program do not pay the Health Professions Resource Fee.
### Oregon Institute of Technology
#### Dental Hygiene Program—LaGrande

#### 2008-09 Academic Year Tuition and Required Fees—Per Term

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<th>Credit Hours</th>
<th>Tuition and Clinic</th>
<th>Fees Technology</th>
<th>EOU Incidental</th>
<th>Health Service</th>
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- The Dental Hygiene Program in La Grande operates on a contractual agreement between ODS, EOU and OIT.
- Incidental and Health Service fees are set at EOU rates as approved by the Board.
- Health Service fee includes $38.00 for basic health insurance and $3 for needlestick coverage.
- Qualified tuition and fees do not include student health insurance fees for Tax Relief Act reporting.
- Students enrolled in the dental program in LaGrande are required to purchase a student instrument kit, books, scrubs and a computer use fee from ODS.
- Students in this program do not pay the Health Professions Resource Fee.
Academic Programs
Degree Programs

Klamath Falls

Master of Science
Manufacturing Engineering Technology

Bachelor of Science
Allied Health Management
Applied Mathematics
Applied Psychology
Biology
Civil Engineering
Communication Studies
Computer Engineering Technology
Dental Hygiene
Diagnostic Medical Sonography
Dental Hygiene
Echocardiography
Electrical Engineering
Embedded Systems Engineering Technology
Environmental Sciences
Geomatics, with options in:
Geographic Information Systems
Surveying
Health Sciences
Information Technology, with options in:
Accounting
Applications Development
Business/Systems Analysis
Health Informatics
Management, with options in:
Accounting
Entrepreneurship/Small Business
Management
Marketing
Manufacturing Engineering Technology
Mechanical Engineering
Mechanical Engineering Technology
Nuclear Medicine Technology
Nursing (through OHSU School of Nursing)
Operations Management
Radiologic Science
Renewable Energy Systems
Software Engineering Technology
Vascular Technology

Associate Degrees
Associate of Applied Science
Polysomnographic Technology
Associate of Engineering
Computer Engineering Technology
Software Engineering Technology

Minors
Applied Mathematics
Business
Geographic Information Systems

Human Communication
Information Technology
International Business
International Relations
Psychology
Technical Communications

Specializations
Accounting
Entrepreneurship/Small Business
Management
Marketing
Picture Archiving and Communication System (PACS) (suspended while under revision)

Certificates
Accounting (post baccalaureate)
Dispute Resolution
Polysomnographic Technology (pending approvals)

Portland

Master of Science
Manufacturing Engineering Technology

Bachelor of Science (degree completion)
Clinical Laboratory Science (joint degree with OHSU)
Electronics Engineering Technology
Information Technology, with options in:
Applications Development
Business/Systems Analysis
Health Informatics
Manufacturing Engineering Technology
Mechanical Engineering Technology
Operations Management
Renewable Energy Systems
Software Engineering Technology

Associate of Applied Science
Emergency Medical Technology–Paramedic (joint degree with OHSU)

Boeing Company, Seattle, Washington

Master of Science
Manufacturing Engineering Technology

Bachelor of Science (degree completion)
Manufacturing Engineering Technology
Mechanical Engineering Technology
La Grande (ODS School of Dental Hygiene)
Associate of Applied Science
Dental Hygiene

Medford (Rogue Community College)
Associate of Applied Science
and Bachelor of Science (online degree completion)
Respiratory Care

Introduction

For 60 years, Oregon Institute of Technology has focused on changing the lives of Oregonians by preparing them to meet the technical and management needs of business, industry and healthcare agencies.

Today, OIT offers a menu of academic choices that features bachelor of science programs in engineering, the engineering and health technologies, management, communication and the applied sciences. These include bachelor's degree-completion programs offered online and at locations in Portland and Seattle, Wash. OIT also offers a number of associate degree programs.

OIT is accredited by the Northwest Commission on Colleges and Universities. Additional accreditations, licensure and approvals of individual programs are listed in the appropriate program sections of this catalog. Copies of accreditation documents are available in the Office of the Vice President for Academic Affairs/Provost, Oregon Institute of Technology, 3201 Campus Dr., Klamath Falls, OR 97601-8801.

The faculty in the School of Health, Arts and Sciences includes individuals with nationally-recognized credentials and international experience. Clinical practice and externships are included in health technology education, while the arts and sciences provide exposure to liberal studies that complement technical coursework.


The School's faculty is composed of professional engineers, certified public accountants and those with corporate executive experience. From accounting to robotics, these programs include extensive laboratory time to apply the theories that are studied.

Degree Programs

Graduate Program
A Master of Science in Manufacturing Engineering Technology is offered at OIT campuses in Portland and Klamath Falls and at The Boeing Company in Washington.

Undergraduate Programs
The School of Health, Arts and Sciences includes Allied Health Management, Clinical Laboratory Science, Dental Hygiene, Health Sciences, Medical Imaging Technology, Applied Psychology, Environmental Sciences, Communication Studies, Paramedic Education, Respiratory Care and Polysomnographic Technology. Nursing is offered as part of a statewide program administered by the Oregon Health & Science University. Programs in Clinical Laboratory Science and Paramedic Education are offered in Portland in conjunction with OHSU. The Associate of Science in Respiratory Care is offered at Rogue Community College in Medford. A Bachelor of Science in Respiratory Care is offered online. In Dental Hygiene, the bachelor's degree is offered in Klamath Falls and the associate degree in La Grande at ODS School of Dental Hygiene. An online degree completion bachelor's is also offered.

Medical Imaging, one of the largest bachelor's degree programs in the nation in this field, includes majors in Radiologic Science, Vascular Technology, Diagnostic Medical Sonography, Nuclear Medicine Technology and Echocardiography (online degree completion only).

Summer Term
Anyone may enroll in Summer Term. Formal admission to the university is not necessary and there are no GPA or high school diploma requirements. High school students who want to take college courses are invited to attend. Potential students who have not met the college entrance requirements may take appropriate courses during the summer to correct these deficiencies. Students may preregister from early May through the first day of summer school. Tuition is on a per-credit basis.

The eight-week term begins in mid-June and ends in mid-August. Four-week sessions will begin in mid-June and mid-July. Classes meet Monday through Thursday and
are scheduled either during day or evening hours. Many summer classes are offered online via distance education.

A separate Summer Term class schedule is available on the Web in mid-April. This schedule provides a listing of courses, fees, registration and housing information. Registration for Summer Term begins May 1.

Portland Programs

Lita Colligan, Associate Vice President for Strategic Partnerships
Dick Swanson, Director of Facilities and Contracts

Professor: Lawrence Wolf, Manufacturing and Mechanical Engineering and Technology

Assistant Professor: Mateo Aboy, Electrical Engineering and Renewable Energy

Assistant Professor: Robert Bass, Electrical Engineering and Renewable Energy

Assistant Professor: Jay Bockelman, Computer Systems Engineering Technology

Assistant Professor: Ralph Gibbs, Management

Assistant Professor: Grant Kirby, Management

Assistant Professor: Michael Kirshner, Management

Assistant Professor: Geoffrey Peter, Manufacturing and Mechanical Engineering and Technology, Electrical Engineering and Renewable Energy

OIT Portland Administrative Office and East Campus
7726 SE Harmony Rd.,
Portland, OR 97222
(503) 725-3066
(503) 725-5925 - fax

OIT Portland West Campus
20175 NW AmberGlen Ct, Suite 100
Beaverton, OR 97006
(503) 725-2133
(503) 725-2130 - fax

OIT Portland Web site: www.oit.edu/portland

OIT offers bachelor’s degree programs at two locations in the Portland area: the OIT Portland East Campus in Clackamas and the OIT Portland West Campus in Beaverton. These programs are primarily designed for working professionals who are motivated to advance in their careers. Most courses are offered on an extended-day and weekend schedule.

All OIT Portland degree programs are taught by OIT faculty and industry-experienced adjuncts in a curriculum that directly parallels the courses offered in Klamath Falls. An OIT Portland degree blends theory and real-world practice in well-equipped laboratories and project-based courses.

At OIT Portland, students can:

• Transfer up to 120 applicable credits from a community college, or other accredited college, depending on courses taken and degree desired.

• Earn up to 45 credits of “Credit for Prior Learning” through—
  a. Credit by Examination: Challenge courses where you have working knowledge of the subject.
  b. Credit by Portfolio: Demonstrate mastery of course outcomes through documentation.
  c. Military course credit through accredited evaluation.

• Enjoy small student-to-faculty ratio in the classroom.

• Expect industry-experienced faculty to teach classes, not a teaching assistant.

• Pay significantly lower public tuition rates and receive full student assistance services.

• Expect to become highly desirable employees.

The Portland degree-completion programs are included under the institutional accreditation by the Northwest Commission on Colleges and Universities, the same agency that accredits all OUS institutions. All OIT engineering technology programs are accredited by ABET, the Accreditation Board for Engineering and Technology.

OIT Portland offers eight bachelor of science degree completion programs and one master of science program to students in the Portland Metropolitan area. OIT’s programs include both bachelor of science degree and professional-development programs in Electronics Engineering Technology, Operations Management, Information Technology, Manufacturing Engineering Technology, Mechanical Engineering Technology, Renewable Energy Systems and Software Engineering Technology. All four years of the technical courses are available for Renewable Energy Systems and Software Engineering Technology. OIT Portland’s Information Technology Program has three specializations: Systems Analysis, Applications Development and Health Informatics and most classes are offered in a traditional classroom or online.

Additionally, OIT offers a bachelor’s degree in Clinical Laboratory Science and an Associate degree in Emergency Medical Services (Paramedic) in Portland in collaboration with Oregon Health and Science University. Classes are conducted on the OHSU campus and at the Tualatin Valley Fire and Rescue Training Center in Sherwood. Administrative details are facilitated by the Klamath Falls Campus.

OIT also provides upper division general education courses that complement a foundation of general education courses offered by community colleges and other educational institutions. Generally, students must complete lower division writing, com-
communication and math courses at another institution in order to complete a bachelor's degree at OIT Portland.

All baccalaureate programs are offered in cooperation with other OUS institutions and area community colleges, which provide lower-division general education courses. Classes are held at the two OIT campuses, other OUS campuses, at various community colleges and selected industrial facilities in the Portland area.

A schedule of degree-related courses for OIT Portland is published about six weeks prior to each term. Printed copies can be obtained through the OIT Portland administrative office, (503) 725-3066, or accessed through OIT’s Portland Programs Web site at www.oit.edu/portland.

Educational Partnerships
OIT has developed educational partnerships to make it as easy as possible for students to transfer credits, complete their degrees and move up the career ladder. OIT has a dual enrollment agreement with Portland Community College so that students may begin a bachelor’s degree program at PCC and complete a bachelor’s degree at OIT. Under this agreement, the student’s PCC transcript is automatically sent to OIT at the end of each term of enrollment. An advantage of dual enrollment is that students only need to complete one application form in order to be admitted at both institutions. The completion of a dual enrollment form allows students to authorize OIT and PCC to freely share academic information with each other, which streamlines transcript requests and transfer evaluations. For information about dual enrollment, go to www.oit.edu/portland and click on “Portland Admissions.”

OIT also has articulation agreements with many community colleges that allow students to have a clear understanding of what courses will transfer to OIT and satisfy requirements for the major. Articulation agreements help students who have completed courses at community colleges or other institutions to map a career path.

Articulation Agreements and Advising Guides for each Portland-based degree program are listed on the OIT Web site: www.oit.edu/transferagreements.

Business Partnerships
OIT Portland’s faculty work closely with business partners and advisers to ensure that their courses integrate new technologies and are responsive to business needs for skilled professionals. Portland area businesses, such as Intel, Maxim, PCC Structural, and Oregon Cutting Systems, regularly send their best and brightest to OIT for degree completion so they can advance into engineering, technology or management positions within their organizations.

In addition, selected courses may be packaged into modules to address specific skill development needs and may be offered at times and locations that are convenient for the business customer. These short courses or workshops are available through contract and customized training in response to requests by the industrial community.


Individual businesses or clusters of companies that are interested in developing a customized short course or professional development program are encouraged to call OIT Portland administrative office, (503) 725-3066 or the Associate Vice President for Strategic Partnerships at (503) 725-5927.

The Boeing Company Program, Seattle, Washington
Nathan Mead, Director
(425)234-5150 office
(425)256-1499 cell
(425)234-1091 fax
nathan.mead@oit.edu

A. Diane Tiefel—Assistant Director
(425) 234-4626 office
(425)234-1091 fax
diane.tiefel@boeing.com
www.oit.edu/bng

U.S. Postal Service Mailing Address:
A. Diane Tiefel, OIT-Boeing Program Office
The Boeing Company
PO Box 3707, MC 60-AM
Seattle, WA  98124

Shipping Address:
A. Diane Tiefel, OIT-Boeing Program Office
The Boeing Company
800 North 6th Street, MC 60-AM
Renton, WA  98055

OIT offers Bachelor and Master of Science Degrees in Manufacturing Engineering Technology and a Bachelor of Science Degree in Mechanical Engineering Technology to employees of The Boeing Company at sites in the Puget Sound area. Also offered are review classes for the Society of Manufacturing Engineers’ CMT and CMfgE exams and a Certificate of Completion in Composites.
Distance Education

Barb DeKalb, Director

Owens Hall, 205
(541) 885-1142
barb.dekalb@oit.edu

The primary mission of Distance Education at OIT is to offer convenient programs for degree completion. Working adults, particularly those registered or licensed in an array of health professions, may easily utilize these Web-based offerings. Currently, OIT offers programs in Echocardiography, Dental Hygiene, Radiologic Science, Vascular Technology and Respiratory Care. Typically, students in these programs will start distance education from a foundation for degree completion built on two sources:
1. Credit completed at another school and will transfer to OIT; and
2. Substantial credit granted for past experience and/or registry or licensure in their profession.

Oregon Institute of Technology also offers a distance program leading to a Bachelor of Science in Information Technology and Operations Management. Although most of the coursework for this major may be completed through online delivery, a handful of courses may require students to complete on-site laboratory work in Portland or Klamath Falls. Students from outside the area may complete these requirements by transferring approved courses from another college or university.

OIT also offers a certificate program and an Associate of Applied Science degree in Polysomnographic Technology.

Additionally, Distance Education offers online courses leading to a minor in Information Technology, which can be completed in conjunction with a degree program at OIT or Eastern Oregon University; certification in Picture Archiving Communication Systems (PACS); and a bank of online general education courses open to all OIT students.

Distance education classes typically run about 10 weeks in length and are paced to keep students on track, while allowing them to complete weekly assignments at their convenience.

Sponsored and Pre-College Programs

Gayle Yamasaki, Director
Sponsored and Pre-College Programs
(541) 885-1815
gayle.yamasaki@oit.edu

Katie Edwards, Coordinator, High School Transitions, Sponsored and Pre-College Programs
(541) 885-1278

Jennifer Wheeler, Coordinator K-8 Elementary and Junior High Transition Programs, Sponsored and Pre-College Programs
(541) 885-1668

OIT’s Sponsored and Pre-College Programs Office offers innovative and energizing educational outreach programs designed to encourage K-12 students to pursue educational and career goals in science, technology, engineering and mathematics (STEM). The goals of our programs are to:

1. Increase understanding and interest in STEM careers among participants;
2. Build confidence in their technical abilities; and
3. Introduce them to role models and mentors.

Advanced Credit Program—The Advanced Credit Program (ACP) consists of college courses taught in the high schools by college-level qualified high school instructors. These courses are offered as part of the regular high school curriculum with the option of registering for college credit from OIT. ACP gives students the opportunity to try college-level courses, gain valuable skills, and develop study habits for college.

Brain Bowl—Brain Bowl is an academic trivia competition pitting teams of four against one another. Players use a buzzer system to ring in and answer questions in four main subject areas: math, natural science, social science and humanities. It is a fast-paced fun game appealing to anyone who likes playing Trivial Pursuit or who enjoys watching television programs like “Jeopardy.”

Expanding Your World—a two-day conference on OIT’s campus for eighth-grade boys and girls. The goal of this event is to increase awareness of science and technology, engineering and mathematics careers; to increase students’ knowledge of occupations that are non-traditional to their gender; and to provide boys and girls with opportunities to meet and interact with positive role models from the community.

FIRST LEGO League (FLL)—FLL is geared towards fourth- through ninth-grade students introducing them to the interesting world of LEGO robotics. Teams of four to ten students build, program and complete missions with the robot they’ve built. A presentation and technical performance for judges is also required. Students compete in December at OIT and winners advance to the State competition held in Portland in January.

GEAR UP—A series of special programs, created in partnership with Oregon GEAR UP, to ensure that Oregon’s low-income middle school and high school students are prepared for, pursue and succeed in post-secondary education. These programs include My Story: Finding the Hero Within; GRAD: Graduation Really Achieves Dreams; and A Hero’s Journey: Countdown to College.

High School Transition Program—This is a special offering to high school students to take some of their first-year required courses while still in high school. The students come to the OIT campus to take regular OIT classes, receiving OIT credit at the reduced rate of $25 per credit hour.
I’m Going to College—In partnership with NELA, this day program brings sixth-grade students to campus to expose them to college. The students attend classes, tour OIT and have lunch. A follow-up meeting with parents will be hosted by students’ elementary schools.

MATHCOUNTS—An annual competition in February that challenges students’ math skills, develops their self-confidence and rewards them for their achievements. Open to sixth-, seventh- and eighth-grade students in the Klamath Basin, this program gives students the opportunity to participate in individual and team competitions. The top students advance to the state and national levels.


Teen Women in Science (TWIST)—This residential weeklong summer program focuses on high school women. The program integrates principles of math, computer applications, and engineering. Students experience campus life and gain exposure to career choices in science and engineering. OIT celebrates 17 years of bringing TWIST to young women.

Summer programs include: Amazing Games, DayDreamer, and LEGO Day Camp. For information on these programs, please visit www.oit.edu/precollege.
Student Responsibility
Students are responsible for knowing and understanding Oregon Institute of Technology's requirements relating to registration, academic standards, student activities and student organizations. A partial view of academic regulations is included in the class schedule introduction pages on OIT’s Web site and distributed to new students during their first registration at OIT. Students are encouraged to meet regularly with their departmental advisers and to contact the Registrar's Office with questions about academic procedures, policies or regulations.

Academic Advising
Students are assigned faculty advisers from their academic programs. Advisers maintain a file on students’ progress and help them plan course loads. If a student should change programs, a new adviser will be assigned. The student's advising file will be transferred to and maintained by the new adviser. Degree-seeking students are required to meet with their advisers prior to registration.

Student Classification
In the Oregon University System students are classified according to the number of college-credit hours earned as follows: 0-44, freshman; 45-89, sophomore; 90-134 junior; 135 and above, senior. Transfer credits are included in determining classification.

Quarter System
Oregon Institute of Technology operates on an academic year consisting of three quarters (or terms) of approximately 10 weeks each and a summer session of eight weeks.

Academic Progress and Petitions Committee
Administration of the regulations governing academic requirements is vested in the Academic Progress and Petitions Committee. This committee also has authority to assess probation or to suspend any student from the university when it appears that the student's work is at such a level that the student cannot benefit by continued attendance. The university requires that students make substantial progress toward meeting graduation requirements, including maintaining a minimum 2.00 GPA. Any cumulative GPA below 2.00 is considered unsatisfactory and will bring the student's record under review.

The Academic Progress and Petitions Committee also serves as an advisory group to the Registrar’s Office regarding academic appeals. For information regarding appeals to this committee, students may contact the Registrar’s Office.

Admissions with Special Conditions
If a student is admitted with one or more stipulations and fails to meet any of the prescribed condition(s), that student may be referred to the Academic Progress & Petitions (AP&P) Committee for possible academic disciplinary action, up to and including probation and suspension from the university. The request for review by AP&P can be made by any member of the Admission Committee.

Academic Warning
An academic warning is a caution to the student that there is a lack of satisfactory academic progress. Students, including first term freshmen, who do not achieve a 2.0 in any given term will receive an Academic Warning. Students who have no earned credits, withdrawals (i.e., all Fs, withdrawals (W) and/or incompletes (I)), for two consecutive terms will also receive an Academic Warning.

Academic Probation
Students who have attempted two or more terms at OIT and have an OIT cumulative GPA below 2.0 will be placed on
Academic Probation. Students who have no earned credits, (i.e. all Fs, withdrawals (W) and/or incompletes (I)), for three or more consecutive terms will also be placed on Academic Probation.

Students placed on probation will receive notification that they are on Academic Probation as well as instructions on how to proceed. Once placed on probation, students are advised to limit their course load to 13 credits.

Academic Suspension
Students on academic probation for one term who do not meet the 2.0 cumulative GPA requirement in the successive term of enrollment will be placed on Academic Suspension for at least one term. To reenroll, a student must complete the prescribed procedures and appeal to the Academic Progress and Petitions Committee for reinstatement. Students should contact the Registrar’s Office for reenrollment information. Students who have been suspended are denied all privileges of the institution.

Note: When a student is placed on academic warning, probation or suspension both the student and their adviser will be notified.

Advanced Standing

Credit for Prior Learning
Credit for prior learning by a student admitted to OIT may be granted through a number of independent processes. These include: A) Transfer Credit; B) Military Credit; C) College Level Examination Programs (CLEP) and Advanced Placement credit (AP); D) Credit for National Registry or Licensure Exams; E) Credit by Examination; and F) Credit for Prior Experiential Learning. A number of these categories are for credit that is awarded for educational accomplishments attained outside of accredited post-secondary institutions.

These procedures describe the process used to grant the student appropriate academic credit by each of these methods as follows.

A. Transfer Credit
OIT makes every effort to give maximum consideration to the transfer work presented by enrolling students. To ensure that the student has the requisite knowledge, OIT follows these policies in determining credit:

Accreditation Status of Institution
The institution where the transfer credit was earned must be accredited by an accrediting body recognized by the Council for Higher Education (CHEA).

Students transferring work from an institution that is not accredited by a CHEA-recognized accrediting body may receive transfer credit by 1) demonstrating prior experiential learning with a portfolio, 2) applying for credit after demonstrating competencies in advanced coursework in the same subject area or 3) challenging courses by exam.

International Institutions
Students seeking transfer credit from international institutions must provide OIT with a credential evaluation from an OIT-approved credential evaluation service. Credential evaluation information may be obtained from the Office of Admissions. The credential evaluation must include course titles, credits and grades. Students must also provide course descriptions in English from the international institution. Any associated costs are the responsibility of the student.

Official Transcripts
Prior to the formal awarding of transfer credit, the transfer student must provide an official transcript of coursework completed at all other higher education institutions. Failure to list all colleges attended on the Application for Admission may result in denial of admission or transfer credit.

Admitted transfer students must submit official transcripts at least one term prior to enrollment to ensure timely evaluation of transfer credits.

Determination of Transfer Credit
The OIT Registrar’s Office determines the transfer equivalency of general-education courses using articulation agreements, course descriptions, course outlines, and course syllabi. The student’s major department determines the transfer equivalency for technical or major courses using similar resources.

Applicability of Transfer Credit
OIT provides a complete, written transfer evaluation upon the admission of the student, prior to the planned term of enrollment. The evaluation delineates the transfer credit on a course-by-course basis and specifies direct course equivalencies, courses which may be used towards general-education requirements, elective credits and courses which do not receive credit.

At the time of admission, OIT’s written transfer evaluation may include elective credits that do not apply towards a specific degree. These credits will be recorded as transfer credit for registration purposes, allowing the student an earlier registration appointment based on total earned credit hours.

Some transfer work, which may not be directly equivalent to OIT courses, may be appropriately substituted to meet OIT requirements. Students may seek course substitution approval by completing the Course Waiver/Substitution form and obtaining the signature of the adviser, department chair and Registrar.

Credit for Alternative-Delivery Courses
Courses taken by alternative delivery from other accredited institutions will be evaluated as transfer credit.

Minimum Grade Standards
OIT considers for transfer those courses that carry a grade of D or better from an accredited institution. However, many OIT departments require a C or better course grades for prerequisite and graduation purposes. OIT does not normally transfer math courses with a “D” grade.
Pre-College Level Transfer Credit
OIT does not accept for transfer credit courses that are considered pre-college or vocational. OIT determines the level and nature of the course by examining the catalog description and course-numbering system of the student's prior college.

Pre-Approval of Transfer Credit
OIT students who plan to enroll at other institutions during the summer or to complete coursework for the degree in absentia are encouraged to obtain written pre-approval of transfer credit to ensure transfer equivalency for degree purposes.

B. Military Credit
OIT will grant credit for military courses and experiences based on American Council of Education (ACE) guidelines (found in the Guide to the Evaluation of Educational Experience in the Armed Forces) and faculty recommendations. Credit is awarded in accordance with transfer credit policies at OIT and the Oregon University System. Students may request evaluation of military credit by furnishing an official AARTS or SMART transcript.

C. College-Level Examination Programs and Advanced Placement:

College Level Examination Program (CLEP)
OIT will award credit for several college-level examination programs. These examinations must be completed with a satisfactory score and an original copy of test results must be forwarded to the Registrars Office from the testing service. In order to receive such credit, the student must be admitted to an OIT degree program and registered for classes during the term in which the request is made. OIT awards credit for College-Level Examination Program (CLEP) subject examinations, but not for CLEP general examinations. Information on CLEP course equivalencies and minimum scores may be obtained from the OIT Registrar’s Office.

Advanced Placement (AP)
Students who complete college-level work in high school under the Advanced Placement (AP) program must achieve a minimum score of three to be granted credit on their OIT transcript. AP course equivalences are listed above or may be obtained from the Office of Admissions or Registrar’s Office. The equivalencies are currently being reviewed and may change.

A maximum of 25 percent of the credits used toward the degree may be CLEP and AP.

International Baccalaureate
OIT evaluates IB test scores much in the same way it evaluates AP scores. Students must have official test scores sent to the Office of Admissions. OIT may award credit to students who receive a 5 or higher on any Higher Level IB examination. No credit is awarded for Subsidiary Level exams. For more information, please contact the Registrar’s Office at (541) 885-1300.

D. Credit for National Registry or Licensure Exams
OIT will award a pre-approved block of credit to fully admitted and enrolled students who have passed a national registry or licensure exam in majors offered by the institution. This award of credit is based on the academic department’s annual review of the national exam questions in comparison to the curriculum taught on campus. Full
information is maintained in the Registrar's Office and in the Office of Distance Education, which coordinates on-line degree completion programs offered by OIT.

Credit by Examination and Credit for Prior Experiential Learning
OIT awards credit for educational accomplishments attained outside of accredited postsecondary institutions.

E. Credit by Examination
Students currently enrolled at OIT may request credit for a course by special examination. This process is called a course challenge and the procedures are:

1. Credit by examination (course challenge) is available to students who are fully admitted in degree-granting programs.
2. Students may not challenge a course which they have previously taken for credit and received a grade other than an audit, nor may they challenge the same course more than once. If students register for a course they wish to challenge, they must drop and challenge the course before the last day to drop without a record.
3. No more than 25 percent of the credits submitted for graduation may be credit by examination.
4. Credit by examination counts toward graduation residency requirements. For a bachelor's degree, students must complete 45 credits at OIT with the last 15 to be taken on campus. For the associate degree, students must complete 30 credits with the last 15 to be taken on campus.
5. Examinations receive either a P (pass) or F (fail). A pass suggests the student has mastered the material comparable to a grade of C or better in the course being challenged. The Registrar records P grades on the student transcript, but does not count the P in grade-point-average calculations. The Registrar does not record F grades.
6. Students must pay a non-refundable per-credit fee, as published by the Office of Business Affairs, prior to the examination.
7. Departments are responsible for preparing an appropriate examination, evaluating the student's response and submitting results to the Registrar's Office. Departments reserve the right to declare any course offering as non-challengeable.

Further procedures and general guidelines for course challenges may be obtained from the Registrar's Office.

F. Credit for Prior Experiential Learning
Oregon Institute of Technology recognizes that students learn outside the classroom through experiences on the job, vocational education, professional development courses, workshops, and independent study. OIT may grant credit for experiential learning when it is judged to be equivalent to college-level courses in the OIT curriculum. This process is only appropriate for students who wish to demonstrate learning for more than one required course. Typically, credit for experiential learning will replace a series of major specific courses.

Level of Credit
OIT grants credit for prior experiential learning at the undergraduate level only. Credit will be awarded only for documented prior learning that has a balance, appropriate to the subject, between theory and practical application, and not just for prior experience. Credit should be appropriate to the academic context in which it is accepted.

Eligibility Requirements
The student must be fully admitted and enrolled at OIT. Credit will not be granted until the student has successfully completed the procedure outlined. Credit for prior experiential learning will not be granted if the student has already received credit for the same course. No more than 25 percent of the credits needed for a degree or certificate may be from credit for prior experiential learning. Credit may only be granted for courses offered by OIT and the university reserves the right to declare any course offering as inappropriate for prior experiential learning credit.

Awarding of Credit
Completion of the institution's review process does not guarantee a student will receive credit for prior experiential learning. If the student successfully demonstrates evidence of college-level learning, credit will be identified on the student's transcript as credit for prior learning. This credit will not be graded or counted in the student's grade point average. Students wishing to appeal the award of credit should appeal to the Associate Provost, whose decision is final.

Tuition and Fees
Fees charged for portfolio assessment are based on the services performed. The application fee for a specified course is published by the Office of Business Affairs. This non-refundable fee must be paid prior to submitting the portfolio for assessment. Proof of payment must accompany the student's Credit for Prior Experiential Learning Application.

Transfer of Prior Experiential Learning Credit
OIT accepts credit for prior learning from other institutions, provided that the transfer institution awards such credit on the basis of standards similar to those outlined by the Northwest Association of Colleges and Universities (NWCCU).

Faculty Evaluator Qualifications
Credit is awarded based on the recommendation of teaching faculty who are qualified in the subject area, who have adequate training in portfolio evaluation and who are on regular appointment with the university on a continuing basis.

Procedure
Students seeking credit for prior experiential learning should first confer with their adviser to help assess if their experience and learning are appropriate for this process. If it is determined that experiential learning assessment is appropriate, the student should contact the Registrar.

The Registrar will determine whether the student has met the eligibility requirements
outlined in this procedure. If so, the Registrar and the Department Chair will sign the student's Credit for Prior Experiential Learning Application. The student must then complete a prior experiential learning documentation course. This course may be utilized for curricular requirements by the major department if appropriate.

Upon completion of the documentation course, the student will submit his/her Credit for Prior Experiential Learning Application and completed portfolio to the appropriate faculty evaluator as determined by the department chair. The faculty member will review the portfolio and if necessary will interview the student. Review of the portfolio will ensure that the learning experience demonstrates the theories, competencies, and outcomes of the academic subject matter. When appropriate, the faculty member may choose to consult with others who have expertise in the subject matter before making a decision as to whether or not to grant credit. The final decision is recorded on the student's Credit for Prior Experiential Learning Application and will be forwarded to the Registrar. The Credit for Prior Experiential Learning Application will be included in the student's permanent academic record. The portfolio will be retained in accordance with OIT's archive guidelines.

OIT major department and the Registrar. The agreed-upon catalog will be the one a student uses when he/she transfers to OIT. Students must enroll at OIT within two years of this approval.

Departments periodically review their curriculum for technical currency. As a result, significant program changes may occur. Courses previously required in the curriculum may no longer be offered. The major department will provide a transition plan for students to fulfill degree requirements.

Grading System

Student academic achievement is evaluated and reported in accordance with a system of letter grades assigned at the end of each course. These grades become part of the student's transcript, a permanent academic record. A summary statement of a student's total academic record is expressed as a cumulative grade point average (GPA).

Undergraduate Grading Policy

OIT uses a 4.0 grading scale to evaluate student performance. Upon completion of a course or upon termination of attendance in the course, a student's performance will be graded by the instructor and reported to the Registrar as follows:

<table>
<thead>
<tr>
<th>LETTER GRADE</th>
<th>MEANING</th>
<th>POINTS PER CREDIT HOUR</th>
<th>USED TO CALCULATE GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Exceptional</td>
<td>4</td>
<td>Yes</td>
</tr>
<tr>
<td>B</td>
<td>Superior</td>
<td>3</td>
<td>Yes</td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
<td>2</td>
<td>Yes</td>
</tr>
<tr>
<td>D</td>
<td>Inferior</td>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>F</td>
<td>Failed</td>
<td>0</td>
<td>Yes</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>IP</td>
<td>In Progress</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>N</td>
<td>Audit</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>NP</td>
<td>No Pass: Equated to a “D” or “F”</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>P</td>
<td>Pass: Equated to a “C” or better</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawn</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>Z</td>
<td>No Grade Assigned</td>
<td>0</td>
<td>No</td>
</tr>
</tbody>
</table>

Programs discontinued by the university may have specific entrance and graduation limits that override this catalog-of-graduation policy.

Baccalaureate Upper-Division Credit Requirement

Baccalaureate students must complete a minimum of 60 credits of upper-division work before a degree will be awarded. Upper-division work is defined as 300- and 400-level classes at a bachelor’s-degree-granting institution.
Honors
Special Recognition
Each spring a number of OIT graduates will be selected for membership in national honor societies. Honor-society members can be identified by a distinctive honor cord worn over the shoulder at Commencement.

Alpha Chi, which selects members from baccalaureate programs, identifies its honor-society graduates with a white cord. Tau Alpha Pi, which selects members from the sophomore, junior and senior classes of engineering-technology majors, identifies its graduates with a crimson cord. Lambda Phi Eta selects from juniors and seniors in Communication Studies. Members are identified by a gold cord. Lambda Nu selects from juniors and seniors in Medical Imaging. Members are identified by a cord that is green, gold and maroon. Sigma Theta Tau, who wear gold and maroon cords, includes Nursing students in the top third of the class.

President's List (Applicable to full-time students only)
Each term, students with a GPA of 3.70 or better are included on the President's List.

Dean's List (Applicable to full-time students only)
Each term, students with a GPA of 3.30-3.69 are included on the Dean's List.

Non-Standard Grading
Courses may be graded on the pass (P)/no pass (NP) basis at the discretion of the department and the registrar. Courses may include, but are not limited to seminars, externships, co-ops, independent study, certificate classes, and physical education.

Class Drop/Withdrawal Policy
A student may drop/withdraw from a course through Friday of the seventh week of the term. Although teaching faculty may drop a student during the first two weeks of the term, according to the Faculty Initiated Withdrawal Policy, they are not required to do so. Students will be notified of instructor-initiated drops in writing.

Faculty-Initiated Withdrawal Policy
Teaching faculty can drop a student during the first two weeks of the term from a class if the student has not attended by the second regularly scheduled meeting of that class.

The student will be notified of the withdrawal in writing by the Registrar's Office.

Student Initiated Drops/Withdrawals
1. During the first 10 days of the term, a student may drop one or more courses with no record. However, if a student withdraws from all courses, the student's transcript will note “Complete Withdrawal.”

2. After the first 10 days of the term, a student who withdraws from one or more courses will receive a “W” for those courses. Students may withdraw from individual courses through Friday of the seventh week of the term.

3. After Friday of the seventh week, students will receive a letter grade (“A”, “B”, “C”, “D”, “F”, “P”, “NP”, “I” or “IP”) from the instructor.

NOTE: The deadlines for dropping/withdraw from a course are listed in the Academic Calendar.

Medical Withdrawal
Students requesting a medical withdrawal based on a physical or mental-health condition should consult with the Vice President for Student Affairs (VPSA) or designee. For more information, please refer to the Student Handbook.

Complete Withdrawal
If a student is currently registered and decides to withdraw from all classes, the student must notify the Registrar’s Office. Upon notification, the student will be required to complete the appropriate documentation.

1. Complete withdrawals from the university may be processed through Friday of the week prior to final-exam week.

2. Financial aid will be held for future terms after a complete withdrawal has been processed.

3. Depending on the time of the term, a complete withdrawal will result in a notation of a “complete withdrawal” or “Ws” on the student's transcript.

Incompletes
When the quality of a student’s work is satisfactory, but some essential requirement of the course has not been completed for reasons acceptable to the instructor, a grade of Incomplete (I) may be assigned and additional time granted for completion. The instructor is responsible for submitting an “I” grade and completing the Request for Incomplete form and submitting it to the Registrar's Office.

An “I” grade must be removed by the end of the next term (summer session not included). An “I” may only be extended under the most extenuating circumstances and then only for one additional term. If an “I” is not removed within the allotted time, the “I” then reverts to the alternate grade assigned by the instructor on the incomplete form.

Incompletes received in the anticipated term of graduation must be finished and the grades recorded in the Registrar’s Office within three weeks after the end of the final term. Otherwise, the diploma will be delayed until the term during which all degree requirements are met.

In Progress (IP) Grade
The “In Progress” grade is used for classes with coursework that continues past the end of the term in which the student is registered. Examples include externship, co-op, clinical and project classes. The “IP” grade may be retained over multiple terms. Upon completion of the required coursework the “IP” grade will be replaced by a letter grade.
Grade Point Average

A student's GPA is computed by assigning a numerical point value to each grade: “A,” 4 points per credit; “B,” 3 points per credit; “C,” 2 points per credit; “D,” 1 point per credit; “F,” 0 points per credit.

GPA is the quotient obtained by dividing total grade points by total hours attempted. Grades of “I”, “P”, “NP”, “W” and “N” are disregarded in calculating GPA; however, a “P” is equivalent to a “C” or better. For example:

<table>
<thead>
<tr>
<th>Class #</th>
<th>Title</th>
<th>Credits</th>
<th>Grade</th>
<th>Point Value for Credits</th>
<th>Earned Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRI 121</td>
<td>English Composition</td>
<td>3</td>
<td>B</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>ECO 201</td>
<td>Economics</td>
<td>3</td>
<td>C</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>MATH 111</td>
<td>College Algebra</td>
<td>4</td>
<td>A</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>CHE 101</td>
<td>Elementary Chemistry</td>
<td>3</td>
<td>B</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>CHE 104</td>
<td>Elementary Chemistry Lab</td>
<td>1</td>
<td>B</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>HED 250</td>
<td>Contemporary Health Issues</td>
<td>2</td>
<td>A</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>PHED 190</td>
<td>Racquetball</td>
<td>1</td>
<td>B</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

GPA = \frac{\text{Sum of earned grade points}}{\text{Credits attempted}} = \frac{54}{17} = 3.18

Repeat Policy

The following restrictions apply for course-repeat situations:

1. Students may attempt the same course (for a “W” or a letter grade) a total of four times.
2. Each withdrawal (“W”) is considered an attempt. Withdrawals, however, are not included in GPA calculations.
3. The new grade earned will replace the previous grade(s) when computing GPA. Only the first two earned grades will be excluded for GPA calculations. The last grade earned will be used on the petition to graduate.
4. All grades and credits remain on the student's official transcript.

\textit{NOTE:} Students should consult with their financial-aid counselor to determine financial eligibility for repeat courses.

Auditing Policy

A student has the option to enroll in a class for informational purposes only. This enrollment is classified as an \textit{audit} and is regulated by the following procedures:

1. Audit classes are charged at regular tuition rates as printed in the class schedule.
2. The only grade an audit class may be granted is “N” (audit). The “N” grade is disregarded in the GPA and is not valid toward graduation requirements.
3. Class attendance shall be in accordance with the instructor’s attendance policy for all students in the class.
4. Instructors having audit students have no obligation to grade or record the audit student's work.
5. An audit option may be requested during the registration period. Changes “to” or “from” the audit option may be requested no later than the 10th academic day of the term.
6. Students auditing a course may, at a later term:
   a. Register for the same course for credit.
   b. Challenge the course by examination.

Excessive Course Load

Students are allowed to register for 21 credit hours (including audits) during an academic term without special permission. Fifteen credits are the maximum for summer session. Students wishing to register for an overload must have a 3.0 cumulative GPA and receive special approval from the adviser and the Registrar. Appeals may be considered for special circumstances. The class schedule will provide associated tuition costs each term.

Substitution Within the Curriculum

Students desiring to depart from the curriculum prescribed in the catalog should contact their departmental adviser to begin the process. It is the responsibility of the student to file a petition with the Registrar's Office for such changes. Substitution forms must be approved and filed prior to or with the petition for graduation in order to assure acceptability toward meeting graduation requirements.

Dead Week Policy

Dead Week (the period of Monday morning prior to finals week until the Monday morning of finals week) is the last week of regularly scheduled activities for the term. As such, Dead Week includes routine activities (e.g., lectures, discussions, laboratories, quizzes, assignments, appropriate course reviews, etc.).

1. Final examinations, when utilized, must be given at the scheduled time during finals week.
2. No student activities or athletic events will be scheduled during Dead Week.
3. Projects and/or examinations due Dead Week may not exceed 20 percent of the final course grade without giving students at least three weeks prior notice.

The appropriate vice president must approve any exceptions to this policy.

Final Exams
All teaching faculty will meet their classes during finals week at the final-examination time designated in the official class schedule issued at the beginning of each term.

1. No student activities or athletic events will be scheduled during finals week.
2. Methods of evaluation are at the discretion of the instructor. They should be specified in the course syllabus and distributed to students the first week of class.
3. Faculty who use a final examination will administer that exam at the time designated in the official class schedule. Finals times are designed not to conflict.

Individual students may request exceptions to this policy. These must be approved in advance by the instructor.

Course instructors may request exceptions to this policy. The exception must be approved by the Assistant Provost and students should be given at least three weeks prior notice of the change.

Academic Forgiveness
The Academic Forgiveness policy allows undergraduates with an unsatisfactory GPA to drop a maximum of three consecutive terms for which forgiveness is requested. Academic forgiveness applies to terms only. Students are not allowed to select courses within terms for forgiveness. Academic forgiveness is granted on a case-by-case basis by the Academic Progress and Petitions Committee. It is an extreme measure; it may be granted only once and only when a student provides clear and convincing evidence of a renewed commitment to advancing his or her education. Once forgiveness is granted, it may not be revoked. Forgiveness can be applied only to credits earned at OIT.

If the petition is approved, the student’s transcript will have a notation stating, “Academic Forgiveness Granted” above each term in which forgiveness was granted. Forgiven courses and grades are no longer calculated in the GPA and do not apply toward graduation. However, a record of all coursework will remain on the transcript.

Eligibility
To apply for consideration for academic forgiveness a student must:

1. Have earned less than a 1.0 term GPA for the term(s) being considered for forgiveness. The term(s) for which forgiveness is being requested must have been taken at least seven years prior to the request;
2. Have had at least a two-year lapse in enrollment at OIT;
3. Be currently enrolled at OIT;
4. Have completed a minimum of 30 graded credits at OIT with minimum cumulative GPA of 3.0 or better since resuming studies at OIT;
5. Apply for forgiveness with the Academic Progress and Petitions Committee before degree completion.

Procedure
To apply for academic forgiveness, a student must submit a formal letter of request to the Registrar, which must include:

1. Specific term(s) (maximum of three consecutive) for which forgiveness is being requested;
2. Statement of academic goals and a term-by-term plan for degree completion signed by the student’s academic adviser;
3. Rationale for the request.

The Registrar will forward the application to the Academic Progress and Petitions Committee for review and will notify the student of the Committee’s decision.

Veterans Satisfactory-Progress Standards
The Veterans Coordinator administers the satisfactory-progress standards for students who are receiving educational benefits. The following satisfactory progress requirements apply:

1. Students must make satisfactory progress toward their certified educational objectives. They must satisfactorily complete all courses for which they have been certified.
2. Students who reduce their course load at any time during the term must notify the Veterans Coordinator of this reduction. Withdrawals from courses after the drop period may result in an overpayment of benefits unless there are mitigating circumstances.
3. Students must maintain a term GPA of 2.0 or better. A term GPA of less than 2.0 constitutes unsatisfactory progress.
4. The Veterans Administration will be notified by OIT within 30 days of any change in status or failure to meet satisfactory progress.
5. Students will be placed on probation at the end of the first term of unsatisfactory progress. The length of the probationary status is one term. Failure to meet satisfactory progress at the end of the probationary term could result in termination of benefits.

Graduation
Application for Graduation
Students must file an Application to Graduate and a Petition for Graduation at least two terms prior to the term of graduation. These forms are available online at www.oit.edu/regr, at the Registrar’s Office, in the Portland Programs offices and in academic departments. They are submitted to the Registrar’s Office for evaluation.

OIT Portland students must schedule a graduation degree-check appointment with their major’s program director at
least two terms prior to graduation. The final graduation check is completed by the Registrar’s Office at the Klamath Falls campus.

**Grade Point Requirement**

OIT requires a minimum cumulative GPA of 2.0 for graduation.

**Graduation Residency Requirements**

All degrees require students to take a minimum number of OIT courses. For an associate degree, a minimum of 30 term-credit hours must be taken from OIT. For a bachelor’s, a minimum of 45 term-credit hours must be taken from OIT. Credits earned through OIT course challenge or the OIT Credit-for-Prior-Learning program are considered resident credits toward graduation requirements. All other credits granted by examination (CLEP or AP) or other methods are non-resident credits. Students desiring to complete course requirements for graduation from OIT at another college or university must receive prior approval from the Registrar’s Office.

**Catalog of Graduation**

Students must meet all degree requirements from one OIT catalog. The catalog may be chosen from the year the student is first admitted and enrolled or from any subsequent year. However, at the time of graduation, all students, including transfer students, must use a catalog that is no more than seven years old.

Transfer students may select their catalog of graduation prior to full admission to OIT by obtaining written approval from their OIT major department and the Registrar. The agreed-upon catalog will be the one a student uses when he/she transfers to OIT. Students must enroll at OIT within two years of this approval.

Departments periodically review their curriculum for technical currency. As a result, significant program changes may occur. Courses previously required in the curriculum can no longer be offered. The major department will provide a transition plan for students to fulfill degree requirements.

Programs discontinued by the university may have specific entrance and graduation limits that override the catalog of graduation.

**Multiple Majors**

An undergraduate student may earn multiple majors if all the degree requirements for each major are met. All successfully completed majors will be listed on both the transcript and diploma.

**Concurrent Degrees**

Students may be granted a second bachelor’s degree provided they meet the requirements for both degrees and complete an additional 36 credits beyond the requirements of the first degree. Forty-five credits are required if the first degree was not granted by OIT and students must meet the general-education requirements as outlined in their catalog of graduation. If the first bachelor’s degree was granted by OIT, the general-education requirements are waived for the second degree.

**Course Substitutions**

Students may seek course substitution approval by completing the Course Substitution form and obtaining the signature of the adviser, department chair and Registrar. Course substitutions for general-education requirements must satisfy the same category of general-education requirement. For example, a humanities course specified by the major department may be substituted for another humanities course, subject to the above approvals.

**Graduation in Absentia**

Students wishing to complete the OIT degree by attending another college and transferring work after the minimum-residency credits have been met (30 for associate and 45 for bachelor's degree) need to complete a Graduation-in-Absentia form in the Registrar’s Office to have the final transferring classes approved for their degree. This should be done prior to leaving OIT and beginning at the other college. The student must also complete the Petition for Graduation and turn it in at the same time for verification purposes.

**Commencement**

OIT’s graduation ceremony is held in June each year at which time degrees are granted to all who have satisfactorily completed all major and university general education requirements during the preceding spring term. Summer, Fall and Winter-term graduates who have already received diplomas may also participate in Commencement.

Students who demonstrate the ability to graduate in the following Summer term may also participate in Commencement ceremonies. However, Summer graduates will not receive academic honors or diplomas at the Spring Commencement.
Diplomas
OIT awards diplomas at Commencement based on preliminary grades and preliminary degree checks for Spring-term graduates. Students who receive a diploma at Commencement, but do not subsequently complete degree requirements, will be notified after the final degree check. The student will be asked to return the diploma. The university will place a hold on the student’s registration privileges and transcript if the diploma is not returned.

Those students with estimated failing or incomplete grades will receive a letter, rather than a diploma, inside the diploma cover. After completion of all degree requirements, these students will receive their diplomas in the mail. Diplomas will also be held until all fees and charges due OIT have been paid and exit interviews have been completed for Federal, Perkins and institutional loans.

Academic Honors
At each Commencement, OIT recognizes academically outstanding students who will receive their bachelor’s degree with academic honors. This honor is based on all OIT courses.

To be eligible for honors a student must complete a minimum of 75 OIT credits.

Academic honors are based on the following criteria:

Cum Laude—graduation with honors–3.50-3.74 GPA
Magna Cum Laude—graduation with high honors–3.75-3.89 GPA
Summa Cum Laude—graduation with highest honors–3.90-4.00 GPA.

Note: Students who do not have 75 OIT credits and who are graduating from a Degree Completion program must complete a minimum of 45 graded OIT credits to be eligible for honors. For Degree Completion students, who fall into this category, honors are based on all OIT courses and transfer courses used for the degree.

Honors recognized at the graduation ceremony do not include grades from the term immediately preceding Commencement. After final grades are posted, the honors standing of some students may change. These students will be notified. A student’s final honors standing will be posted on the official transcript.

General Education Requirements

All OIT degree programs, regardless of specialty, prepare students for roles as employees, citizens and humanists through required and elective general-education courses. These courses, integrated with the major’s technical courses, ensure that graduates have made progress toward becoming educated persons and provide a foundation for lifelong learning. General education courses are organized within the curriculum in such a manner that students will acquire knowledge, abilities and appreciation as integrated elements of the education experience. If a student holds a baccalaureate degree or higher from a recognized, accredited institution, as determined by OIT, the general-education requirements for the OIT baccalaureate may be waived subject to departmental program requirements.

Baccalaureate General Education Requirements

Communication
SPE 111 Fundamentals of Speech
WRI 121 English Composition
WRI 122 English Composition

Plus nine credits from speech/writing courses having SPE 111 or WRI 122 as a prerequisite or specified by the major department from the following: COM 205*, COM 225, COM 320*, COM 347, COM 411, COM 412, COM 413; SPE 321; WRI 123, WRI 214, WRI 227, WRI 321, WRI 322, WRI 323, WRI 327, WRI 328, WRI 350, WRI 410.

Humanities
Nine credits selected by student or specified by a major department from the following:

ART–Art; ENG–Literature; HUM–Humanities; MUS–Music; PHIL–Philosophy; Languages (second year); COM 205*, COM 320*. Other transfer courses, defined as “humanities” by the Registrar’s Office, may be used in this category. No more than three credits of activity or performance-based courses may be used in this category.

Social Science

Twelve credits selected by student or specified by major department from the following:

ANTH – Anthropology; ECO – Economics (ECO 201N may not be used to satisfy both Business electives and Social Science general-education requirements.); GEOG – Geography; HIST – History; PSCI – Political Science; PSY – Psychology; SOC – Sociology. Other transfer courses, defined as “social science” by the Registrar’s Office, may be used in this category. GEOG 105 and GEOG 115 may not be used to satisfy social science credits.

* COM 205 and COM 320 may not be used to satisfy both Communication and Humanities credits.

Technology

Specific requirements for demonstrating computer proficiency may be established by the academic department.

Science/Mathematics

One four credit college-level mathematics course for which at least intermediate algebra is the course prerequisite.

Plus 12 credits selected by student or specified by major department from biological sciences (BIO, CHE), mathematics (MATH), physical sciences (PHY), physical geography (GEOG 105 or GEOG 115) geology or physical anthropology (ANTH 101). At least four credits must be completed from a laboratory-based science course in BIO, CHE, GEOG 115 or PHY.
**Baccalaureate Upper-Division Requirement**

Baccalaureate students must complete a minimum of 60 credits of upper-division work before a degree will be awarded. Upper-division work is defined as 300- and 400-level classes at a bachelor's-degree-granting institution.

**Bachelor of Science Degree**

The Bachelor of Science degree requires the student to opt between completion of 36 credits in mathematics and science or 45 credits in mathematics, science and social science. Students placed at a higher beginning level of mathematics than is published in the curriculum of their major may choose to substitute those mathematics credits surpassed by their accelerated level of placement with electives from any department to attain the required number of general-education credits required by the university for graduation.

**Intercultural Studies**

Students are encouraged to select at least one class from the following lists of intercultural courses. These courses also satisfy general-education requirements.

**Humanities:** COM 205 Intercultural Communication, COM 320 Advanced Intercultural Communication, ENG 281 Contemporary World Literature, SPAN 201/202/203 Second-Year Spanish.

**Social Science:** ANTH 103 Introduction to Cultural Anthropology, GEOG 106 Cultural Geography I, GEOG 107 Cultural Geography II, GEOG 108 Cultural Geography III, HIST 342 Modern Asia.

**Notes**

Students who graduated from high school in 1997 or after, who did not complete two years of a foreign language in high school, must complete two terms of college-level foreign or second language in order to receive an OIT degree.

Remedial or developmental courses, including MATH 100 and WRI 115, cannot be used for graduation.
Notes
University Departments

Degrees, Options, Minors, Specializations and Certificates

Departments

Allied Health Partnership
  Clinical Laboratory Science Program
  Paramedic Education Program
  Polysomnographic Technology Program
  Respiratory Care Program
Civil Engineering
Communication
Computer Systems Engineering
  Technology
Dental Hygiene
Electrical Engineering and Renewable Energy Systems
Geomatics
Humanities and Social Sciences
Management
Manufacturing and Mechanical Engineering and Technology
Mathematics
Medical Imaging
Military Science
Natural Sciences
Nursing (through OHSU School of Nursing)
Physical Education and Health Education
  (selected courses)

Degrees, Options, Minors, Specializations and Certificates

Master of Science
  Manufacturing Engineering Technology
Bachelor of Science in:
  Allied Health Management
  Applied Mathematics
  Applied Psychology
  Biology
  Civil Engineering
  Clinical Laboratory Science
    (joint degree with OHSU)
  Communication Studies
  Computer Engineering Technology
  Dental Hygiene
  Diagnostic Medical Sonography
  Echocardiography
  Electrical Engineering
  Electronics Engineering Technology
  Embedded Systems Engineering
    Technology
  Environmental Sciences
  Geomatics, with options in:
    Geographic Information Systems
    Surveying
  Health Sciences
  Information Technology, with options in:
    Accounting
    Applications Development
    Business/Systems Analysis
    Health Informatics
  Management, with options in:
    Accounting
    Entrepreneurship/Small Business
    Management
  Marketing
  Manufacturing Engineering Technology
  Mechanical Engineering
  Mechanical Engineering Technology
  Nuclear Medicine Technology
  Nursing (through OHSU School of Nursing)
  Operations Management
  Radiologic Science
  Renewable Energy Systems
  Respiratory Care (degree completion)
  Software Engineering Technology
  Vascular Technology
Associate of Applied Science in:
  Dental Hygiene
  Emergency Medical Technology–Paramedic (joint degree with OHSU)
  Polysomnographic Technology
  Respiratory Care
Associate of Engineering in:
  Computer Engineering Technology
  Software Engineering Technology

Minors in:
  Applied Mathematics (Mathematics Department)
  Business (Management Department)
  Geographic Information Systems
    (Geomatics Department)
  Human Communication
    (Communication Department)
  Information Technology (Management Department)
  International Business (Management Department)
  International Relations (Humanities and Social Sciences Department)
  Psychology (Humanities and Social Sciences Department)
  Technical Communication
    (Communication Department)
Specialization in:
  Accounting
  Entrepreneurship/Small Business
  Management
  Marketing
  Picture Archiving and Communication Systems (PACS) (Medical Imaging Department)(suspended while under revision)
Certificate in:
  Accounting (post baccalaureate)
  Dispute Resolution
  Polysomnographic Technology
Module in:
  Oregon Transfer
Allied Health Partnerships
Marian Ewell, Department Chair  
Office: Oregon Health & Science University, Portland, Gaines Hall, 110

Degrees Offered  
Bachelor of Science in Clinical Laboratory Science (joint degree, OIT and OHSU)  
Bachelor of Science in Respiratory Care  
Associate of Applied Science in Emergency Medical Technology—Paramedic (joint degree, OIT and OHSU)  
Associate of Applied Science in Polysomnographic Technology  
Associate of Applied Science in Respiratory Care

Certificate Offered  
Polysomnographic Technology

The Department of Allied Health Partnership Programs offers undergraduate curricula in Clinical Laboratory Science, Emergency Medical Technology—Paramedic, Polysomnographic Technology (pending approvals), and Respiratory Care. Each program is designed to prepare individuals for professional practice in these specific health care specialties. The Department is committed to training health care professionals through education, research, scholarship, clinical practice, and community service. The curricula provide tools to effectively address changing health problems of society. Each of the programs is accredited by its respective accrediting agency and meets all requirements set forth in the standards of an accredited program.

The Department is located in the following sites:  
- Clinical Laboratory Science Program: Oregon Health & Science University, Portland  
- Paramedic Education Program: Tualatin Valley Fire and Rescue, Regional Training Center, Sherwood  
- Polysomnographic Technology Klamath Falls OIT campus  
- Respiratory Care Program: Rogue Community College, Medford

Enrollment in each program, except Polysomnographic Technology, is limited. Completion of the prescribed general university curriculum does not assure a student acceptance into the limited admission programs. Contact the respective program office in the fall term preceding anticipated enrollment to obtain admissions application information. Student selection is competitive with consideration to academic achievement, character and demonstrated interest.

Clinical Laboratory Science Program
Marian Ewell, Program Chair  
Office: Oregon Health & Science University, Portland, Gaines Hall, 110

Assistant Professors: M. Ewell, A. Furman, S. Goodstein  
Associate Professor: C. Otto

Degree Offered  
Bachelor of Science in Clinical Laboratory Science (joint degree, OIT and OHSU)

The Bachelor of Science in Clinical Laboratory Science (also called Medical Technology) prepares the student for entry into the clinical laboratory science profession.

Oregon Institute of Technology (OIT) and Oregon Health & Science University (OHSU) now jointly offer the Clinical Laboratory Science Bachelor of Science Program, established in 1933 at OHSU. Students learn about laboratory sciences and develop skills in analytical thinking, problem solving, and communication to provide better health care. The structured laboratory program includes technical instruction and practical experience providing undergraduate university instruction at the senior level. The program comprises 12 months (4 consecutive terms on the OHSU campus beginning each Fall term) followed by an extended fifth term, which is a 16-week clinical-laboratory externship. Completion leads to a joint baccalaureate degree from OIT and OHSU. Graduates are in demand and well prepared to enter the profession of clinical laboratory science.

Credentialing
Graduates of the Clinical Laboratory Science Program are eligible to take either of two nationally recognized certifying examinations for Clinical Laboratory Scientists: National Credentialing Agency for Laboratory Personnel (NCA) or American Society for Clinical Pathologists (ASCP).

Accreditation
The Clinical Laboratory Science Program is accredited by the National Accrediting Agency for Clinical Laboratory Science (NAACLS), a specialized accrediting body recognized by the Council for Higher Education Accreditation and/or the Secretary of the U.S. Department of Education. The contact information for NAACLS is:  
National Accrediting Agency for Clinical Laboratory Sciences  
8410 West Bryn Mawr Avenue, Suite 670  
Chicago, IL 60631  
(773) 714-8880  
(773) 714-8886 (fax)  
info@naacls.org  
http://www.naacls.org

Mission Statement
The mission of the OIT–OHSU CLS Program is to provide superior education to the students in the field of Clinical Laboratory Science. Our goals are to admit and retain students with demonstrated abilities from all segments of the population and to continue to provide students with a quality of education that meets or exceeds the national accreditation standards. Our expectation is to graduate individuals who are professionally competent; who possess a commitment to lifelong learning; who exhibit a sense of commitment to the ethical and humane aspects of patient care; who appreciate the need for research to develop knowledge of health, disease, health care management and education; and who recognize the role of the clinical laboratory scientist in the assurance of quality health care.

Admissions Requirements
A student may enter the CLS Program with or without a baccalaureate degree. Those students entering the program without a baccalaureate degree must have completed at least 103 transferable term hours at an accredited college, community college and/or
Individuals who have met admission requirements seven or more years prior to application to the Clinical Laboratory Science Program must complete additional academic work to qualify. This may be accomplished by one of three routes:
1. Completion of college-level courses in biochemistry and microbiology with a grade of "C" or better.
2. Receiving credit by examination in biochemistry and microbiology; the examination must be administered by an instructor at an accredited college or university. The OIT-OHSU CLS Program does not administer these examinations.
3. Achieving a CLEP score at or above the 50th percentile on both biology and chemistry examinations. Information can be obtained by writing to the Educational Testing Service, CLEP, Box 592, Princeton, NJ 08540.

Facilities
Students spend the first four terms (12 months) at OHSU in Portland in a combination of didactic lecture and student laboratory practice courses. Students become familiar with contemporary clinical laboratory procedures and instrumentation.

Clinical Practicum Externships
The structured 15-month (five contiguous terms) Clinical Laboratory Science Program includes a 16-week clinical laboratory externship. Clinical externships are predominantly located in hospital and reference laboratories throughout Oregon. Additional clinical laboratory training sites are located in Washington and Nevada. Under special circumstances, clinical sites have been utilized in other regions of the United States. The 16-week clinical laboratory externship is spent at the affiliated institution under the supervision of an adjunct clinical instructor. Students do not have classes on the OHSU or OIT campus during the 16-week clinical laboratory externship.

The Clinical Laboratory Science faculty determine clinical site assignment. Although students admitted into the Clinical Laboratory Science Program are guaranteed a clinical externship, due to limitations in available externship sites from year to year, student placement at a specific site may not be possible. Placement in a clinical externship is subject to the following:
1. All academic requirements must be met before commencement of the externship.
2. Externship placement occurs during the fourth term (Summer term).
3. Students must comply with all externship facility requirements. This may include passing a drug test, and completing a request for criminal history.

Graduation Requirements
Students must maintain a minimum GPA of 2.00 to be eligible for graduation. In addition, a final grade of “C” or better in all student laboratory courses, as well as receiving a grade of “Pass” in all rotations in the clinical externship is required for graduation.

Curriculum
See Professional Courses for the required courses and the order in which they should be taken. All courses require admission to the Clinical Laboratory Science Program or instructor consent.

Bachelor of Science in Clinical Laboratory Science

Professional Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLS 406</td>
<td>Biometry 2</td>
</tr>
<tr>
<td>CLS 410</td>
<td>Clinical Microbiology I 2</td>
</tr>
<tr>
<td>CLS 420</td>
<td>Clinical Immunology 3</td>
</tr>
<tr>
<td>CLS 441</td>
<td>Practicum: Instrumentation 1</td>
</tr>
<tr>
<td>CLS 442</td>
<td>Practicum: Hematology 6</td>
</tr>
<tr>
<td>CLS 443</td>
<td>Practicum: Transfusion Medicine 4</td>
</tr>
<tr>
<td>CLS 444</td>
<td>Practicum: Microbiology 6</td>
</tr>
<tr>
<td>CLS 445</td>
<td>Practicum: Mycology 2</td>
</tr>
<tr>
<td>CLS 446</td>
<td>Practicum: Parasitology 2</td>
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<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CLS 411</td>
<td>Clinical Microbiology II 2</td>
</tr>
<tr>
<td>CLS 415</td>
<td>Clinical Chemistry I 6</td>
</tr>
<tr>
<td>CLS 447</td>
<td>Practicum: Chemistry 6</td>
</tr>
<tr>
<td>CLS 448</td>
<td>Practicum: Immunology/ Infectious Serology 2</td>
</tr>
<tr>
<td>CLS 449</td>
<td>Practicum: Urinalysis 2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLS 412</td>
<td>Pathophysiology 2</td>
</tr>
<tr>
<td>CLS 416</td>
<td>Clinical Chemistry II 2</td>
</tr>
<tr>
<td>CLS 419</td>
<td>Immunohematology 2</td>
</tr>
<tr>
<td>CLS 461</td>
<td>Clinical Laboratory Management I 2</td>
</tr>
<tr>
<td>CLS 442</td>
<td>Practicum: Hematology 6</td>
</tr>
<tr>
<td>CLS 443</td>
<td>Practicum: Transfusion Medicine 4</td>
</tr>
<tr>
<td>CLS 444</td>
<td>Practicum: Microbiology 6</td>
</tr>
<tr>
<td>CLS 445</td>
<td>Practicum: Mycology 2</td>
</tr>
<tr>
<td>CLS 446</td>
<td>Practicum: Parasitology 2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>
Paramedic Education Program

Suzann Schmidt, Program Director
Office: Tualatin Valley Fire and Rescue, Regional Training Center, Sherwood, Ore.

Instructors: Kate Darling, Justin Dillingham, Charmaine Kaptur, Suzann Schmidt
Medical Director: James Bryan, M.D., Ph.D.

Adjunct Faculty: The program utilizes professional instruction from many of the faculty physicians, physician's assistants, and nurses at OHSU, as well as many other health care professionals from the community.

Degree Offered
Associate of Applied Science in Emergency Medical Technology–Paramedic (joint degree through OHSU and OIT).

The Associate of Applied Science in EMT–Paramedic (also called the Paramedic Education Program) prepares students for a clinical career as a paramedic. Upon completion of the program, graduates are eligible to sit for the National Registry EMT–Paramedic examination. Successful completion of the national examination process can lead to both national and Oregon certification.

Accreditation
The Paramedic Education Program is nationally accredited by The Committee on Accreditation of Educational Programs for the Emergency Medical Services Profession (CoAEMSP), a specialized accrediting body recognized by the Council for Higher Education Accreditation and/or the Secretary of the U.S. Department of Education.

Mission Statement
The mission of the Oregon Health & Science University/Oregon Institute of Technology Paramedic Education Program is to educate prehospital care providers; to prepare EMS leaders of the future; and to enhance the delivery of health care in the out-of-hospital setting.

Career Opportunities
Job opportunities are available for certified paramedics in a variety of settings. Paramedics work for ambulance agencies, fire departments, air-medical transport agencies, industrial sites, tactical-medical teams, and hospitals. Paramedic Education Program graduates often find employment opportunities from the agency where they completed their field externship, and are sought after by many fire and EMS agencies nationwide.

Admission Requirements
Students entering the Paramedic Education Program must have completed 37 credit hours of prerequisite courses prior to beginning the program. Prerequisite coursework includes the following required classes:

- At least 37 term credit hours of general education coursework including writing composition, public speaking, elementary algebra, human anatomy and physiology (12 credits at a 200 level or above), health and physical education, computer science, psychology, social science and an approved elective.
- Technical coursework required includes Emergency Medical Technician–Basic (EMT-B), EMT-B Cooperative Work Experience. Applicants must have an Oregon EMT–Basic certification by the beginning of fall term. Out-of-state applicants certified as EMTs may apply for Oregon reciprocity. Applicants are required to have work experience in health care, with a preference given to EMS experience, either volunteer or paid.

Clinical and Field Externship Practicum
The 12-month Paramedic Education Program is divided into three phases. Following 18 weeks of didactic studies in the classroom and skills lab setting, students enter a 16-week clinical rotation phase. During this phase of the program, student work under the supervision of paramedics, physicians, nurses, respiratory therapists, and other health care professionals. The clinical sites are primarily located at Oregon Health & Science University, with additional sites at five of the Portland-area hospitals and health care facilities.

Once students have successfully completed all requirements of the didactic and clinical phases of the program, they spend an additional 10 weeks working under the direct supervision of a Paramedic Field Training Officer responding to actual emergencies. Students have the opportunity to stay in the Portland area for this training, or to go out-of-state. Externship sites include locations in Oregon, Washington, Nevada, Texas, Colorado, Kansas and Missouri.

Graduation Requirements
Students must maintain a minimum GPA of 2.50 to be eligible for graduation. In addition, a “Pass” grade must be achieved for all clinical and externship requirements.
Associate of Applied Science in Emergency Medical Technology–Paramedic

Curriculum
Required courses and recommended terms during which they should be taken:

### Paramedic Professional Courses

#### Fall
- CHE 210 Clinical Pharmacology  3
- EMS 115 Introduction to EMS  2
- EMS 200 Medical Terminology  3
- EMS 218 Trauma Assessment and Management  3
- EMS 231 Medical Emergencies I  3
- EMS 235 Electrocardiography  2
- EMS 271 EMT-Paramedic Skills Laboratory Part I  2
- Total  18

#### Winter
- EMS 211 Prehospital Emergency Pharmacology  3
- EMS 232 Medical Emergencies II  4
- EMS 236 Advanced Electrocardiography  2
- EMS 272 EMT-Paramedic Skills Laboratory Part II  3
- EMS 281 Clinical Practicum I  6
- Total  18

#### Spring
- EMS 233 Medical Emergencies III  3
- EMS 257 Geriatric Seminar Series  3
- EMS 282 Clinical Practicum II  12
- Total  18

#### Summer
- EMS 290 Field Externship Practicum  18

#### Total Credit Hours for A.A.S. Degree in EMT–Paramedic:

- Prerequisite General Education  37
- Paramedic Course  72
- Total Credit Hours  109

### Polysomnographic Technology

Jane E. Perri, Ph.D., RPSGT,  
Program Director  
Office: Owens Hall, Room 132

### Degrees Offered

This program is offered through Allied Health Partnerships. Students can choose from several degree options:

1. Certificate in Polysomnographic Technology. Students must successfully complete the core courses required to sit for a national exam. Computer and Internet access is required. Successful completion of the certificate curriculum leads to eligibility to sit for the national Registered Polysomnographic Technologists examination (RPSGT).

2. Associate of Applied Science in Polysomnographic Technology. Students must successfully complete the courses in the certificate program for Polysomnographic Technology and other primarily general education courses. The degree completion courses can be taken from OIT or transferred from another college. Successful completion of the two-year curriculum leads to eligibility to sit for the national Registered Polysomnographic Technologists examination (RPSGT). Computer and Internet access is required.

3. Bachelor of Science in Allied Health Management: Emphasis in Polysomnography. After the student has successfully completed the RPSGT exam, they may complete health management courses that are offered through OIT or via the distant education program while working in their hometown. (See the Department of Management section of this catalog for more information regarding this degree.)

### Accreditation

The Polysomnographic Technology Program has applied for full accreditation by the Commission on Accreditation of Allied Health Education Programs (CAAHEP). The curriculum follows the guidelines suggested by the Association of Polysomnographic Technologists. Inquiries regarding accreditation should be directed to the Board of Registered Polysomnographic Technologists, 8201 Greensboro Drive, Suite 300, MacLean, VA 22102, (703) 610-9020. CAAHEP is a specialized accrediting body recognized by the Council for Higher Education Accreditation and/or the Secretary of the U.S., Department of Education.

### Career Opportunities

Registered polysomnographic technologists, under medical direction, conduct diagnostic testing and evaluation of sleep disorder patients. Their duties involve the use of highly advanced technology and compassionate patient care. Graduates are employed by hospitals, out-patient testing facilities, and bio-medical equipment manufacturers. Currently there is a severe nationwide shortage of registered polysomnographic technologists.

### Licensure

Students are eligible to sit for the national exam administered by the Board of Registered Polysomnographic Technologists following the completion of the core courses in the certificate program.

### Student Preparation

A science background is beneficial to those entering any health sciences profession. It is recommended that the student considering a career in polysomnography take a college bound course of study in high school that includes algebra, chemistry, and biology or human anatomy and physiology. It is recommended that students take courses in Microsoft Word, Excel and PowerPoint in high school. Students are required to provide proof of completion either Cardio Pulmonary Resuscitation (CPR) or Basic Cardiac Life Support (BCLS) prior to admission.

### Computer Proficiency Requirement

Demonstrated computer proficiency is required by the Board of Registered Polysomnographic Technologists to be eligible to sit for the national exam. The PSG Program is a distance education program requiring basic computer proficiency to be successful. Successful completion of the program therefore, indicates basic computer proficiency.

### Degree Completion Program

The associate degree program offers a degree completion program for registered polysomnographic technologists who lack a degree. The courses for this program can be taken through the Distance Education Department or in the classroom. Not all of the required courses are available online and
Admissions Procedures and Requirements

All applicants must meet the general admissions requirements to enroll in the Polysomnographic Technology Program. To be eligible for admission into the Polysomnographic Technology Program, applicants must meet the following criteria:

1. All applicants are required to submit an official Application for Admission to the Distance Education Department, accompanied by a $100 non-refundable fee and official transcripts of each college or university attended. Acceptance to the Polysomnographic Technology Degree Program is contingent upon acceptance to OIT. Detailed information and forms can be found on the OIT Distance Education Website.

2. Applicants for the certificate program must be high school graduates and employed in an accredited sleep disorder facility. If a prospective candidate is not employed in a sleep facility, an appropriate site must be found and a clinical agreement between OIT and that facility must be established prior to admission.

3. Candidates must provide proof of completion of either a Cardiac Pulmonary Resuscitation (CPR) course or a Basic Cardiac Life Support (BCLS) course prior to enrollment.

4. Candidates must have had HIPAA training and submit immunization records prior to their clinical placement.

5. Criminal background clearance is required prior to acceptance.

Graduation Requirements

Minimum graduation requirements for the A.A.S are the successful completion of 48 credit hours of general education courses and 42 credit hours in the area of specialization with a GPA of 2.0 or better. In addition, a final grade of “C” or better must be earned in all professional courses (PSG, ECHO), communication courses and science/mathematics course to continue in the program. This requirement also applies to the certificate program.

Polysomnographic Technology Certificate

Curriculum

Required courses:

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ECHO 227</td>
<td>Basic ECG Recognition and Testing</td>
<td>3</td>
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<tr>
<td>RCP 231</td>
<td>Pulmonary Physiology</td>
<td>4</td>
</tr>
<tr>
<td>EET 100</td>
<td>Basic Electricity, Electronics and Safety</td>
<td>4</td>
</tr>
<tr>
<td>PSG 211</td>
<td>Fundamentals of Polysomnography and Patient Care</td>
<td>3</td>
</tr>
<tr>
<td>PSG 221</td>
<td>Physiology of Sleep</td>
<td>3</td>
</tr>
<tr>
<td>PSG 231</td>
<td>Sleep Disorders Pathology</td>
<td>4</td>
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<tr>
<td>PSG 252</td>
<td>Clinical Polysomnographic Tech I</td>
<td>6</td>
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<tr>
<td>PSG 253</td>
<td>Clinical Polysomnographic Tech II</td>
<td>6</td>
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<tr>
<td>PSG 254</td>
<td>Clinical Polysomnographic Tech III</td>
<td>6</td>
</tr>
<tr>
<td>PSG 264</td>
<td>Pediatric/Neonatal Polysomnography</td>
<td>3</td>
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<td>Total</td>
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<td>42</td>
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</tbody>
</table>

Demonstrated computer proficiency is required by the Board of RPGST. After completion of the Web-based program, the student will have demonstrated computer proficiency.

Associate of Applied Science in Polysomnographic Technology

Curriculum

All courses in the Certificate Program and all courses listed below are required to earn the A.A.S. degree:

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIO 231</td>
<td>Human Anatomy and Physiology I</td>
<td>4</td>
</tr>
<tr>
<td>BIO 232</td>
<td>Human Anatomy and Physiology II</td>
<td>4</td>
</tr>
<tr>
<td>BIO 233</td>
<td>Human Anatomy and Physiology III</td>
<td>4</td>
</tr>
<tr>
<td>BIO 200</td>
<td>Medical Terminology</td>
<td>2</td>
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<tr>
<td>MATH 243</td>
<td>Introductory Statistics</td>
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<tr>
<td>PSY</td>
<td>Psychology 201, 202, or 203</td>
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<tr>
<td>SPE 111</td>
<td>Fundamentals of Speech</td>
<td>3</td>
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<tr>
<td>WRI 121</td>
<td>English Composition</td>
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</tr>
<tr>
<td>WRI 122</td>
<td>English Composition</td>
<td>3</td>
</tr>
<tr>
<td>WRI 227</td>
<td>Technical Report Writing</td>
<td>3</td>
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</table>

Math/Science/Social Science elective 6
Humanities elective 3
Electives 6

Total 48

Total Credit Hours for A.A.S. Degree in Polysomnography

Polysonomographic Technology Certificate Courses 42
Additional Courses 48
Total Credit Hours 90

Respiratory Care Program

James L. Hulse, MPH, RRT, RPFT, PPS, Program Director

Office: Rogue Community College, Medford
202 South Riverside Avenue, Medford, OR 97501
james.hulse@oit.edu

Degrees Offered

The Respiratory Care Department offers two degrees: a three-year associate of applied science degree, and a bachelor of science degree completion program. The associate degree program prepares the respiratory care student for entry into the respiratory care profession and eligibility for the National Board for Respiratory Care (NBRC) certificate examination (CRT) and registry examinations (RRT). Upon successful completion of the program, the graduate is eligible to apply for examination and state licensure. The sophomore and junior years of the program are taught on Rogue Community College’s Medford campus.

Accreditation

The Respiratory Care Program is fully accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) and in collaboration with the Committee on Accreditation for Respiratory Care. Inquiries regarding accreditation should be directed to The Committee on Accreditation for Respiratory Care (CoARC), 1248 Harwood Rd., Bedford, TX 76021, (800) 874-5615. CAAHEP is a specialized accrediting body recognized by the Council for Higher Education Accreditation and/or the Secretary of the U.S. Department of Education.
**Career Opportunities**
Registered respiratory therapists, under medical direction, administer cardio-pulmonary care, evaluate and assess pulmonary patients, and administer medications and diagnostic tests when appropriate. Their duties involve the use of many of the latest advances in medical arts, sciences, and technology. Graduates are employed in hospitals, rehabilitation facilities, home-care agencies and health care promotion centers as caregivers, managers and educators.

**Licensure**
Students, when applying for licensure, will be asked if they have ever been convicted of a criminal offense, or if they have a history of drug or alcohol abuse. Students with a concern in this area should immediately contact the Oregon Respiratory Therapist Licensing Board (ORTLB) prior to applying to this program.

**Program Objectives**
Upon completion of the program, graduates will demonstrate:

1. Professional behavior consistent with employer expectations as advanced-level respiratory therapists (affective domain).
2. The ability to comprehend, apply and evaluate clinical information relevant to their roles as advanced-level respiratory therapists (cognitive domain).
3. The technical proficiency in all the skills necessary to fulfill their roles as advanced-level respiratory therapists (psychomotor domain).

**Expected Program Learning Outcomes**
Students in the program will demonstrate:

- The ability to communicate effectively in oral, written and visual forms.
- Knowledge of the respiratory care code of ethics and ethical and professional conduct.
- The ability to function effectively in the health care setting as a member of the healthcare team.
- Knowledge and application of mechanical ventilation and therapeutics.
- Knowledge and application of cardiopulmonary pharmacology and pathophysiology.
- Management of respiratory care plans for adult, neonatal and pediatric patients.

**Pre-Respiratory Care Freshman Year**
Enrollment is open to all students who meet the general entry requirements to Oregon Institute of Technology. Students will be listed as Pre-Respiratory Care students.

Students will be selected into the professional curriculum based on grade-point average in the following Pre-Respiratory Care courses and nonsmoking status:

- BIO 231, BIO 232, BIO 233 Human Anatomy and Physiology
- CHE 101, CHE 104 Elementary Chemistry
- MATH 111 or MATH 243 College Algebra or Introductory Statistics
- WRI 121, WRI 122 English Composition

Students are strongly advised to complete all the general education courses in the freshman year curriculum before making application to a professional program.

Selections will be made at the end of the Winter, Spring and Summer terms of the Pre-Respiratory Care year. The number of students selected each year will be determined by the availability of clinical sites and other resources, which means that the number of qualified applicants may exceed the number of spaces available. When that is the case, students with the highest GPA in the courses listed above are the first to be offered a position in the program.

**Degree Completion Programs**
The Respiratory Care Program offers a degree completion program for respiratory therapists who lack a bachelor's degree. The job-embedded program is offered externally, utilizing mail, e-mail, fax and Internet delivery, and requires collaborative learning. Students must participate in an orientation. Upon receipt of the necessary documentation, college credit will be given qualified applicants for having passed the Registered Respiratory Therapist (RRT) examination. Each prospective student's academic credits will be individually evaluated to determine acceptability of the non-professional coursework and the sequencing of the professional courses. Every student must meet the OIT general education requirements for graduation.

The Respiratory Care Degree Completion Programs include senior clinical practice. Arrangements for the clinical practice is made by the student.

**Graduation Requirements**
All credits listed in the curriculum for the catalog year a student begins a program must be fulfilled.

A minimum of 192 credits must be completed and students must maintain a 2.00 GPA to be eligible for graduation. In addition, a final grade of “C” or better must be earned in all professional courses (RCP), communication courses and science/mathematics courses to continue in the program. All AAS degree curricula requirements must be met within three academic years once the student is admitted into a professional program as a sophomore. Students must successfully pass SAE examinations and take the CRT examination as a condition of AAS degree completion.
# Bachelor of Science in Respiratory Care

## Curriculum

Required courses and terms during which they may be taken.

### Pre-Respiratory Care

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Fall</th>
<th>Winter</th>
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</thead>
<tbody>
<tr>
<td>BIO 231</td>
<td>Human Anatomy and Physiology I</td>
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</tr>
<tr>
<td>CHE 101</td>
<td>Elementary Chemistry</td>
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<td>CHE 104</td>
<td>Elementary Chemistry Laboratory</td>
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<td>MATH 111</td>
<td>College Algebra</td>
<td>or MATH 243 Introductory Statistics</td>
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<tr>
<td>BIO 232</td>
<td>Human Anatomy and Physiology II</td>
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<td>WRI 121</td>
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<td>Social Science elective</td>
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<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCP 221</td>
<td>Introduction to Patient Assessment</td>
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</tr>
<tr>
<td>RCP 231</td>
<td>Pulmonary Physiology</td>
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</tr>
<tr>
<td>RCP 241</td>
<td>Respiratory Gas Therapeutics</td>
<td>4</td>
</tr>
<tr>
<td>RCP 251</td>
<td>Pulmonary Pathology and Pharmacology</td>
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<tbody>
<tr>
<td>RCP 222</td>
<td>Pulmonary Rehabilitation and Gerontology</td>
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<tr>
<td>RCP 242</td>
<td>Hyperinflation Therapies</td>
</tr>
<tr>
<td>RCP 252</td>
<td>Cardiopulmonary Pathology and Pharmacology</td>
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<tr>
<td>WRI 227</td>
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<tr>
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<tbody>
<tr>
<td>BIO 105 Microbiology</td>
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<tr>
<td>RCP 275 Cardiopulmonary Diagnosis and Monitoring</td>
<td>4</td>
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<tr>
<td>RCP 281 Professional Review</td>
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<tr>
<td>RCP 284 Introduction to Mechanical Ventilation</td>
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<th>Winter</th>
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<tbody>
<tr>
<td>RCP 261</td>
<td>Clinical I</td>
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<tr>
<td>RCP 262</td>
<td>Clinical II</td>
<td>3</td>
</tr>
<tr>
<td>RCP 304</td>
<td>Field Studies</td>
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<table>
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<tr>
<th>Junior Year</th>
<th>Spring</th>
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<tbody>
<tr>
<td>RCP 361</td>
<td>Clinical III</td>
</tr>
<tr>
<td>RCP 371</td>
<td>Case Conference/Simulation I</td>
</tr>
<tr>
<td>RCP 385</td>
<td>Advanced Mechanical Ventilation</td>
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<tr>
<td>RCP 388</td>
<td>Neonatal and Pediatric Respiratory Care</td>
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<table>
<thead>
<tr>
<th>Senior Year</th>
<th>(Also offered online) Required Courses</th>
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<tbody>
<tr>
<td>BIO 220</td>
<td>Cardiovascular Physiology</td>
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<tr>
<td>BUS 316</td>
<td>Total Quality in Health Care</td>
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<tr>
<td>BUS 317</td>
<td>Health Care Management</td>
</tr>
<tr>
<td>RCP 461</td>
<td>Individual Development Plan</td>
</tr>
<tr>
<td>RCP 472</td>
<td>Senior Clinical</td>
</tr>
<tr>
<td>RCP 473</td>
<td>Clinical Education</td>
</tr>
<tr>
<td>RCP 482</td>
<td>Clinical Leadership</td>
</tr>
<tr>
<td>RCP 483</td>
<td>Clinical Leadership Technologies</td>
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<td>SPE 321</td>
<td>Small Group and Team</td>
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<td>Communication elective</td>
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<tr>
<td>Humanities elective</td>
<td>3</td>
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<tr>
<td>Math/Science electives</td>
<td>6-8</td>
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<tr>
<td>Social Science electives</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>45-47</td>
</tr>
</tbody>
</table>
Civil Engineering

M. Cornachione, Department Chair
Office: Owens Hall, 110

M. Cornachione, Curriculum Coordinator
Office: Owens Hall, 110

Professors: H. Cornachione, M. Cornachione
Associate Professor: R. Lindgren
Assistant Professors: S. St.Clair, C.J. Riley

Degree Offered
Bachelor of Science in Civil Engineering

The field of civil engineering is concerned with the planning, design, construction, and maintenance of private and public works projects such as highways, bridges, buildings, dams, subdivisions, water supplies, and waste management systems.

Program Objectives
The department offers a bachelor’s degree in civil engineering. Graduates from this program will:

1. Be able to practice civil engineering.
2. Be able to pursue advanced education in civil engineering or a related field.
3. Act as responsible, effective and ethical citizens.
4. Understand and effectively communicate the realistic constraints of civil engineering.
5. Be able to perform effectively in a multi-disciplinary environment.

Students enjoy a close relationship with full-time faculty who are licensed professionals with many years of practical experience. While course offerings promote education in relevant theory common to all branches of civil engineering, engineering design concepts are emphasized and integrated throughout the curriculum. This integration is accomplished in a sequential manner.

Early in the curriculum, elements of the creative design process are introduced as students complete design projects appropriate to the freshman level. While most freshman and sophomore courses are intended to provide a solid background in mathematics, communications, basic sciences, and engineering sciences, certain courses provide additional concepts and methodologies supporting more advanced engineering design.

In the senior year, students are required to complete an intensive engineering design project. This effort is focused on a professional quality civil engineering design and includes essential elements of technical communications and group dynamics. The senior project also involves realistic constraints including cost considerations, socioeconomic impacts, aesthetic choices, and ethical deliberations. Graduating seniors are strongly encouraged to sit for the Fundamentals of Engineering (FE) examination as a first step toward licensure as a professional engineer.

To ensure graduates can become responsible, effective citizens and have begun to build a foundation for lifelong learning, students are required to satisfy OIT general education requirements in communication, business, humanities, social sciences, technology, and science/mathematics.

Student Preparation
Students interested in the field of civil engineering should emphasize mathematics and science in high school. Two years of algebra and one year each of geometry, trigonometry, physics, and computer-aided drafting are desirable for entry into the Civil Engineering Program.

Career Opportunities
Upon completing the core curriculum, civil engineering students have a solid foundation in structural, geotechnical, construction, transportation, and environmental engineering. Students can then target specific careers within the broad field of civil engineering.

Structural engineering involves the planning, analysis, and design of buildings and other structures. Graduates will utilize a variety of analysis techniques and design in the principle construction materials of wood, steel, and concrete. Graduates may be employed by consulting engineering firms, state and federal agencies, or construction companies.

Geotechnical engineering includes the design of building foundations and retaining structures, as well as slope stability, groundwater and drainage considerations, materials testing, and inspection. State and federal highway departments and private geotechnical engineering consulting firms typically employ graduates.

Construction management encompasses a broad spectrum including estimating, planning, and scheduling, as well as the legal aspects related to engineering and construction projects. Graduates generally work with construction companies, and may become construction superintendents, project managers, project engineers, or company owners.

Transportation engineering is concerned with the planning, design, construction, operation, performance, evaluation, maintenance, and rehabilitation of transportation systems and facilities, such as highways, railroads, urban transit, and air transportation systems. Graduates have career opportunities with consulting firms, government agencies, and industry.

Environmental engineering is an expanding field due to heightened environmental awareness and resulting regulatory mandates. Graduates can work with regulatory and compliance issues, hazardous and solid waste management, design of water and wastewater treatment facilities, and remediation of existing environmental problems, as well as the planning, design, operation and maintenance of hydraulic and water resource projects. Graduates have career opportunities with consulting firms, government agencies, and industry.
Accreditation
The Civil Engineering Program is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700. ABET is a specialized accrediting board recognized by the Council for Higher Education and/or the Secretary of the U.S. Department of Education.

Graduation Requirements
All courses listed in the curriculum for the current catalog year must be completed to be eligible for graduation, unless a student has already completed the requirements for a category that has changed. When changes are made to the curriculum, students who entered the program under a previous catalog will work with their academic advisers to transition to meet the requirements of the current catalog.

A minimum of 183 credits must be completed and students must maintain a 2.0 GPA to be eligible for graduation. In addition, a final grade of “C” or better must be earned in all courses with CIV, GME, MATH, CHE, and PHY prefixes and ENGR 211, ENGR 213, and ENGR 231. Students must also earn a grade of “C” or better in all courses listed as prerequisites for these courses.

Bachelor of Science in Civil Engineering

Curriculum
Required courses and recommended terms during which they should be taken:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 202</td>
<td>General Chemistry</td>
</tr>
<tr>
<td>CHE 205</td>
<td>General Chemistry Laboratory</td>
</tr>
<tr>
<td>CIV 102</td>
<td>Basic Techniques in Engineering</td>
</tr>
<tr>
<td>MATH 252</td>
<td>Integral Calculus</td>
</tr>
<tr>
<td>PHY 221</td>
<td>General Physics with Calculus</td>
</tr>
<tr>
<td>WRI 122</td>
<td>English Composition</td>
</tr>
<tr>
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<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIV 103</td>
<td>Freshman Design Experience</td>
</tr>
<tr>
<td>CIV 112</td>
<td>Graphical Communication Techniques in Civil Engineering</td>
</tr>
<tr>
<td>MATH 254N</td>
<td>Vector Calculus I</td>
</tr>
<tr>
<td>PHY 222</td>
<td>General Physics with Calculus</td>
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<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIV 223</td>
<td>Elementary Properties of Materials</td>
</tr>
<tr>
<td>ENGR 211</td>
<td>Statics</td>
</tr>
<tr>
<td>GME 161</td>
<td>Plane Surveying I</td>
</tr>
<tr>
<td>PHY 223</td>
<td>General Physics with Calculus</td>
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<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Winter</th>
</tr>
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<tbody>
<tr>
<td>ENGR 213</td>
<td>Strength of Materials</td>
</tr>
<tr>
<td>MATH 221</td>
<td>Introduction to Computational Software</td>
</tr>
<tr>
<td>MATH 361</td>
<td>Statistical Methods I</td>
</tr>
<tr>
<td>WRI 227</td>
<td>Technical Report Writing</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>CIV 221</td>
<td>Engineering Geology</td>
</tr>
<tr>
<td>CIV 317</td>
<td>Economics for Civil Engineers</td>
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<tr>
<td>MATH 221</td>
<td>Applied Differential Equations I</td>
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<tr>
<th>Junior Year</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIV 315</td>
<td>Principles of Environmental Engineering</td>
</tr>
<tr>
<td>CIV 328</td>
<td>Structural Analysis</td>
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<tr>
<td>CIV 358</td>
<td>Project Management</td>
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<tr>
<td>ENGR 231</td>
<td>Fluid Mechanics</td>
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<tr>
<th>Junior Year</th>
<th>Winter</th>
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<tbody>
<tr>
<td>CIV 321</td>
<td>Soil Mechanics</td>
</tr>
<tr>
<td>CIV 331</td>
<td>Reinforced Concrete Design</td>
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<tr>
<td>CIV 361</td>
<td>Water and Sewer System Design</td>
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<td>CIV 371</td>
<td>Introduction to Transportation Engineering</td>
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<table>
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<tr>
<th>Junior Year</th>
<th>Spring</th>
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<tbody>
<tr>
<td>CIV 322</td>
<td>Foundation Engineering</td>
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<td>CIV 344</td>
<td>Structural Steel Design</td>
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<tr>
<td>CIV 362</td>
<td>Hydrology and Surface Water Management</td>
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<th>Senior Year</th>
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<tbody>
<tr>
<td>ENGR 355</td>
<td>Thermodynamics</td>
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<td>ENGR 236</td>
<td>Fundamentals of Electric Circuits</td>
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<td>CIV 401/</td>
<td>Civil Engineering Project I</td>
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<td>COM 401</td>
<td>Civil Design Software Applications</td>
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<td>CIV 415</td>
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<thead>
<tr>
<th>Senior Year</th>
<th>Winter</th>
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<tbody>
<tr>
<td>CIV 402/</td>
<td>Civil Engineering elective</td>
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<tr>
<td>COM 402</td>
<td>Civil Engineering Project II</td>
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<td>PHIL 331</td>
<td>Ethics: Moral Issues in the Professions</td>
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<table>
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<tr>
<th>Senior Year</th>
<th>Spring</th>
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<tbody>
<tr>
<td>Civil Engineering elective</td>
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<td>Humanities elective</td>
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<tr>
<td>Math/Science elective**</td>
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<td>Math/Science elective</td>
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<tr>
<td>Social Science elective*</td>
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<tr>
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* Humanities courses may not be skill or performance based. Students must take either ANTH 335 The Built Environment or HIST 335 The Engineering Profession as one of their social science electives.

** Students must take either CHE 231 (1 credit hour) and CHE 232 (2 credit hours) as a three credit hour component or CHE 455 as one of their math/science electives. The remaining math/science elective must demonstrate an advancement in educational content in BIO, CHE, MATH, or PHY.

• Additional mathematics work in probability/statistics, linear algebra, numerical analysis and advanced calculus is encouraged.

• CHE, MATH and PHY courses must not be lower level than courses in required curriculum.
Communication Department

Linda Young, Chair
Office: Learning Resources Center, 220

Professors: M. Dyrud, V. Vance, L. Young

Associate Professors: K. Brown, M. Hefty, J. Murray, J. Puckett

Assistant Professors: D. Peterson, M. Schnackenberg, R. Zumbo

Instructors: J. Calvo, R. Schwartz

Degree Offered
Bachelor of Science in Communication Studies

The Bachelor of Science in Communication Studies allows students flexibility in designing a program that fits their life and career goals. Students choose core courses and electives from areas such as technical, organizational, and interpersonal communication. In addition, students build a career foundation by completing a focused sequence of electives.

Minors Offered
Human Communication
Technical Communication

Certificate Offered
Dispute Resolution

Career Opportunities
The Communication Studies Program prepares students for careers in areas such as technical communication, organizational communication, new communication technologies, human resources, project management, public relations, sales, and mediation.

General Education Courses
To ensure that OTT’s graduates are skilled communicators, the Communication Department provides writing, speech, and communication courses to satisfy general education requirements. Students in other majors should consult the general education and degree requirements in their major departments.

Student Preparation
All students who plan to study at OIT should enroll in writing and speech classes during their high school years to better benefit from the university’s communication courses. Students applying to the Communication Studies Program should have especially strong reading and writing skills. It is important to have a well-rounded college-preparation background, including courses in math, sciences, and general education.

Bachelor of Science in Communication Studies

Curriculum
Required courses and recommended terms during which they should be taken:

Freshman Year Fall
COM 101 Introduction to Interpersonal Communication 3
MATH 105 Collegiate Mathematics or MATH 111 College Algebra or MATH 243 Introductory Statistics 4
PSY 201 Psychology 3
WRI 121 English Composition Elective 3
Total 16

Freshman Year Winter
COM 102 Introduction to Communication Theory 3
PSY 202 Psychology 3
SOC 204 Introduction to Sociology 3
WRI 122 English Composition Elective 3
Total 15

Sophomore Year Fall
COM 237 Introduction to Visual Communication 3
JOUR 211 Publications: Student Newspaper 3
WRI 227 Technical Report Writing Laboratory Science elective Elective 3
Total 16

Sophomore Year Winter
SPE 321 Small Group and Team Communication 3
Focused Sequence elective* 3
Focused Sequence elective* 3
Laboratory Science/Math elective Elective 3
Total 16

Sophomore Year Spring
COM 205 Intercultural Communication 3
COM 255 Communication Ethics 3
COM 276 Democracy and Media 3
Focused Sequence elective* 3
Laboratory Science/Math elective 4
Total 16

Junior Year Fall
COM 301 Rhetorical Theory and Application 3
COM 326 Communication Research 3
ECO 202N Principles of Economics, Macroeconomics 3
Focused Sequence elective* 3
Focused Sequence elective* 3
Major elective** 3
Total 18

Junior Year Winter
COM 345 Organizational Communication 3
Focused Sequence elective* 3
Major elective** 3
Major elective** 3
Total 12

Junior Year Spring
Focused Sequence elective* 3
Humanities elective 3
Major elective** 3
Major elective** 3
Major elective** 3
Total 15

Senior Year Fall
COM 421 Senior Project 3
Focused Sequence elective* 3
Elective (upper-division) 3
Elective (upper-division) 3
Elective 3
Total 15
Oregon Institute of Technology

Degree Requirements
The Bachelor of Science in Communication Studies requires 184 credits. All major courses, general education communication courses, and focused sequence of electives courses must be completed with a grade of “C” or higher.

Human Communication Minor
The Human Communication Minor supplements OIT technical and applied science degrees and provides advanced training in communication skills. The minor offers courses in the analysis and practice of human communication in a variety of areas including interpersonal, intercultural, health, nonverbal and electronic communication. In addition, the minor allows students to practice conflict resolution, negotiation strategies, ethical communication and rhetorical analysis. Students who have performed well in general education communication courses are encouraged to enroll in this minor. For further information on enrollment, contact a member of the Communication Department or the Communication Department chair. One goal of the Human Communication Minor is to educate students from a variety of majors in the effective practice of human communication skills based on theoretical understandings of communication.

Career Opportunities
The Human Communication minor enhances students’ employability and career flexibility. Many employers in many industries seek employees who can work effectively on multi-disciplinary teams, communicate in many (including international) contexts, understand and resolve conflict in the workplace and analyze and create effective messages in a variety of settings.

Requirements of the Human Communication Minor
SPE 321 Small Group and Team Communication
COM 205 Intercultural Communication
COM 225 Interpersonal Communication
COM 226 Nonverbal Communication

Major Elective Courses
Students will select electives from three categories—Communication, Organizational Communication and Technical Communication—and include two courses (6 credits) from each category, for a total of 18 required credits. A minimum of 12 credits must be upper-division. Please note that some electives require prerequisites.

Communication (6 credits)
COM 215 Creativity in Communication
COM 216 Mastery of Grammar and Punctuation
COM 225 Interpersonal Communication
COM 226 Nonverbal Communication
COM 248 Digital Media Production
COM 320 Advanced Intercultural Communication

Organizational Communication (6 credits)
COM 256 Public Relations
COM 347 Negotiation and Conflict Resolution
COM 348 Facilitation
COM 437 Communication Training and Development
COM 445 Organizational Communication II
BUS 215 Principles of Management
PSY 330 Social Psychology
PSY 347 Organizational Behavior
PSY 360 Organizational Psychology
PSY 361 Industrial Psychology
PSY 410 Organizational Change and Development
PSY 464 Organizational Structure

Technical Communication (6 credits)
COM 365 Electronic Communication and Society
COM 415 Developing Effective Multimedia-based Presentations
MIS 225 Business on the Internet
WRI 214 Business Correspondence
WRI 327 Advanced Technical Writing
WRI 350 Documentation Development
WRI 410 Proposal and Grant Writing
WRI 415 Technical Editing
WRI 420 Document Design

Curriculum notes: To earn the Bachelor of Science degree, students must complete 45 credits in mathematics, science, and social science. Students may satisfy this requirement by taking two or more courses from the following options:

Organizational communication electives chosen from PSY 330, PSY 347, PSY 360, PSY 361, PSY 410 or PSY 464;

or

Senior year open upper-division electives from social science, science, or math;

or

Upper-division science or social science credits.

Students must also complete 60 credits of upper-division courses.

There is no guarantee of externships for Communication Studies majors. The best externship experiences are often those identified and arranged by students.
In addition, students will select THREE from the following list of courses:

- COM 301 Rhetorical Theory and Practice
- COM 320 Advanced Intercultural Communication
- PHIL 331 Ethics in the Professions
- COM 346 Health Communication
- COM 347 Negotiation and Conflict Resolution
- COM 365 Electronic Communication

**Technical Communication Minor**

The Technical Communication Minor supplements OIT technical degrees and provides advanced training and experience in communication skills. The minor offers specialized communication courses in such varied areas as proposal and grant writing, documentation development, and technical editing.

Students who have performed above-average work in their lower-division communication courses are encouraged to enroll in the program. For further information on enrollment, contact any Communication Department faculty member.

**Career Opportunities**

The Technical Communication Minor will enhance students’ flexibility as their careers develop. Employers in private industry, governmental agencies, and research facilities seek a unique combination of skills. First, employers know that the major coursework at OIT prepares students well. Second, the Technical Communication Minor courses build skills in project development, manual writing and editing, computer-aided writing and publishing, oral presentations, and interviewing skills that complement technical education.

Even if students choose not to work as technical writers or editors, the Technical Communication Minor may increase job opportunities and professional advancement.

**Requirements of the Minor**

In addition to the general education requirements in communication, Technical Communication Minor students take four upper-division courses (12 units). Students take two required core courses and choose two electives from the list below. Students must earn a “C” or better in all courses to complete the minor.

**Required Courses**

- COM 301 Rhetorical Theory and Application
- WRI 328 Technical Journalism

**Elective Courses**

- COM 365 Electronic Communication and Society
- COM 415 Developing Effective Multimedia-based Presentations
- WRI 350 Documentation Development
- WRI 410 Proposal and Grant Writing
- WRI 415 Technical Editing
- WRI 420 Document Design

**Dispute Resolution Certificate**

The Dispute Resolution Certificate provides students with a thorough foundation of communication courses related to dispute resolution. The program culminates in specialized courses: negotiation, facilitation, and mediation, giving students expertise in the field. A practicum in mediation offers practical experience in community media-

**Prerequisite or Co-requisite Classes**

- SPE 111 Fundamentals of Speech 3
- WRI 121 English Composition 3
- WRI 122 English Composition II 3

**Program Courses**

- COM 101 Introduction to Interpersonal Communication 3
- COM 205 Intercultural Communication 3
- COM 225 Interpersonal Communication 3
- COM 226 Nonverbal Communication 3
- COM 345 Organizational Communication 3
- COM 347 Negotiation and Conflict Resolution 3
- COM 348 Facilitation 3
- COM 425 Mediation 3
- COM 426 Mediation Practicum 3
- SPE 321 Small Group and Team Communication 3
Computer Systems Engineering Technology Department

Calvin Caldwell, Department Chair
Office: Purvine Hall, 164

Jay Bockelman, Portland Operations Program Director, Software Engineering Technology
Todd Breedlove, Program Director, Software Engineering Technology
Doug Lynn, Program Director, Computer Engineering Technology
Jim Long, Curriculum Coordinator, Software Engineering Technology
Phong Nguyen, Curriculum Coordinator, Computer Engineering Technology

Professors: R. Albert, R. Carestia, C. Caldwell, D. Metzler, S. Yang

Associate Professors: J. Bockelman, M. Breck, T. Breedlove, C. Kansaku, J. Long, D. Lynn, P. Nguyen

Degrees Offered
Bachelor of Science in Computer Engineering Technology
Bachelor of Science in Software Engineering Technology
Bachelor of Science in Embedded Systems Engineering Technology
Associate of Engineering in Computer Engineering Technology
Associate of Engineering in Software Engineering Technology

Common First-Year Curriculum
The Bachelor of Science in Computer Engineering Technology, the Bachelor of Science in Software Engineering Technology, the Bachelor of Science in Embedded Systems Engineering Technology, the Associate of Engineering in Computer Engineering Technology and the Associate of Engineering in Software Engineering Technology, all share a common first-year curriculum.

Curriculum
Required courses and recommended terms during which they should be taken:

Freshman Year Fall
CST 103 Introduction to Computer Systems I 2
CST 162 Introduction to Digital Logic 4
MATH 111 College Algebra 4
WRI 121 English Composition 3
Social Science elective 3
Total 16

Freshman Year Winter
CST 104 Introduction to Computer Systems II 1
CST 116 C++ Programming I 4
CST 130 Computer Organization 3
MATH 112 Trigonometry 4
WRI 122 English Composition 3
Total 15

Freshman Year Spring
CST 105 Introduction to Computer Systems III 1
CST 126 C++ Programming II 4
CST 131 Computer Architecture 3
MATH 251 Differential Calculus 4
SPE 111 Fundamentals of Speech 3
Total 15

Career Opportunities
Work in the field of computer engineering technology includes: application specific integrated circuit development, firmware development, embedded systems design, software development, testing and applications of technology.

Computer engineering technology graduates will be involved in development of hardware, software and embedded applications that adapt digital logic and computer systems to solve problems in a wide range of industries from industrial manufacturing to consumer electronics. In addition, they may be involved in product testing and qualification or in application engineering, customer support, sales and public relations.

The associate’s degree curriculum gives the student a strong foundation in both hardware and software aspects of computing, while also furnishing a solid background in general education subjects including mathematics, physics and communication. The associate degree graduate qualifies as a technician who is productive immediately upon entering the work force. It also provides a way for students who obtain degrees in related disciplines to add breadth to their education.

The bachelor’s curriculum goes beyond the associate’s degree curriculum providing the greater depth and breadth of technical capability necessary for a technologist. The graduate is qualified to assume a responsible position in business or industry. Graduates may be responsible for the development, use and the maintenance of computing systems, and for the supervision of personnel.

New careers are constantly evolving in both the hardware and software branches of this field. A diversified study allows the graduate to quickly adapt to changing market conditions.

Curriculum Mission and Objectives
The mission of the Computer Engineering Technology (CET) Degree Program in the Computer Systems Engineering Technology (CSET) Department at Oregon Institute of Technology is to provide an excellent educa-
tion incorporating industry-relevant, applied laboratory based design and analysis to students. The program is to serve a constituency consisting of its students, high-technology industry and the citizens of Oregon. Major components of the CET Program’s mission in the CET Department are to:

- Educate computer engineering technology students to meet current and future industrial challenges.
- Promote a sense of scholarship, leadership and professional service among graduates.
- Expose students to cross-disciplinary educational program.
- Provide high tech industry employers with graduates in the computer engineering technology profession, a profession which is increasingly being driven by advances in technology.

CET Bachelor of Science Program Educational Objectives

1. Graduates of the Computer Engineering Technology (CET) Bachelor’s Degree Program will possess the ability to analyze, test and solve hardware and software computer engineering problems, using the basic principles of physics, mathematics and applied engineering. They will be able to use modern engineering techniques, skills and tools, particularly recognizing the role that computers play in applied engineering. They will be able to identify, formulate and solve computer engineering problems that are subject to realistic constraints.

2. Graduates of the CET Bachelor’s Degree Program will be able to apply the knowledge and skills from their education in order to understand the impact of computer engineering and technological solutions in an environment consistent with the principles of applied engineering design and development.

3. Graduates of the concurrent degree program will be technically competent with aspects of software technologies and electronics as appropriate to the discipline within each student’s technical interests and professional goals. They will have the ability to apply undergraduate fundamentals in all discipline areas within the field and be able to apply the results to software/hardware/electronic co-design.

4. Graduates of the CET bachelor’s program will have developed a broad base of skills preparing them for professional practice as engineering technologists. They will practice with ethical and professional responsibility; recognize the need for, and have the ability to engage in, continual learning pertaining to advances in technology; and have the ability to function and communicate effectively, both individually and within teams.

5. Have developed a broadened appreciation of hardware functionality and its limitations enabling them to be able to use and directly interface with hardware, when they have obtained an SET bachelor’s degree in conjunction with the associate degree.

CET Associate Degree Program Education Objectives

The CET associate degree is intended to serve a number of purposes. It provides primarily a way for students obtaining a bachelor degree in software (or other related degrees) to add breadth to their education. It also provides an educational option preparing students for employment as technicians.

Graduates of the Computer Engineering Technology (CET) Associate Degree Program will:

1. Possess the ability to test hardware and solve software problems, using the basic principles of electronics, physics, mathematics and applied engineering. They will be able to use modern techniques, skills and tools.

2. Apply the knowledge and skills from their education in order to understand the role of computer and technological solutions in an industrial environment.

3. Be technically competent with aspects of software technologies and electronics as appropriate to the discipline within each student’s technical interests.

4. Have developed a broad base of skills preparing them to be able to pursue professional practice as computer technicians. They will practice ethically and responsibly; recognize the need for, and have the ability to engage in, continual learning as pertaining to advances in technology; and have the ability to function and communicate effectively, both individually and within teams.

Cooperative Field Experience

The cooperative program includes work experience during the junior and senior years. The co-op period is an employment arrangement with an employer in the area of the student’s major field with normal salary and academic credit. These arrangements are made on an individual basis and the student is under no obligation to accept permanent employment with any previous co-op employer.

A student must possess an Associate of Engineering degree in Computer Engineering Technology to be considered for this program.

Accreditation

The Computer Engineering Technology Programs are accredited by the Technology Accreditation Commission (TAC) of the Accreditation Board for Engineering Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700. ABET is a specialized accrediting board recognized by the Council for Higher Education and/or the Secretary of the U.S. Department of Education.

Degree Requirements

Associate of engineering technology degree students must complete 96 credit hours as prescribed by the curriculum outline. The Bachelor of Science in Computer Engineering Technology degree requires 91 additional credit hours, for a total of 186 credits, as prescribed by the curriculum outline.
Bachelor of Science in Computer Engineering Technology

Curriculum

Required courses and recommended terms during which they should be taken:

Freshman Year  Fall
CST 103  Introduction to Computer Systems I  2
CST 162  Introduction to Digital Logic  4
MATH 111  College Algebra  4
WRI 121  English Composition  3
Social Science elective  3
Total 16

Freshman Year  Winter
CST 104  Introduction to Computer Systems II  1
CST 116  C++ Programming I  4
CST 130  Computer Organization  3
MATH 112  Trigonometry  4
WRI 122  English Composition  3
Total 15

Freshman Year  Spring
CST 105  Introduction to Computer Systems III  1
CST 126  C++ Programming II  4
CST 131  Computer Architecture  3
MATH 251  Differential Calculus  4
SPE 111  Fundamentals of Speech  3
Total 15

Sophomore Year  Fall
CST 133  Digital Electronics II – Sequential Logic w HDL  4
CST 250  Computer Assembly Language  4
MATH 252  Integral Calculus  4
PSY 201  Psychology  3
WRI 227  Technical Report Writing  3
Total 18

Sophomore Year  Winter
CST 204  Introduction to Microcontrollers  4
EE 221  Circuits I – DC and 1st Order Transient Analysis  4
CST 231  Computer Design with Programmable Logic  3
CST 232  Computer Design with Programmable Logic Laboratory  1
MATH 254N  Vector Calculus I  4
Total 16

Sophomore Year  Spring
CST 313  Computer Software Techniques  3
EE 223  Circuits II – AC and 2nd Order Transient Analysis  4
SPE 321  Small Group and Team Communication  3
Advanced Math elective**  4
Humanities elective  3
Total 17

Junior Year  Fall
CST 335  I/O Device Interfacing Techniques  4
CST 371  Embedded Systems Development I  4
EE 321  Electronics I-Introduction to Amplifiers and Semiconductor Devices  4
PHY 221  General Physics with Calculus  4
Total 16

Junior Year  Winter
CST 321  Introduction to Microprocessors  5
CST 372  Embedded Systems Development II  3
PHY 222  General Physics with Calculus  4
WRI 327  Advanced Technical Writing  3
Total 15

Junior Year  Spring
CST 351  Microprocessor Peripheral Interfaces  5
CST 351  Advanced PLD Circuits  3
CST 373  Embedded Systems Development III  2
PHY 223  General Physics with Calculus  4
Humanities elective  3
Total 17

Senior Year  Fall
CST 335  I/O Device Interfacing Techniques  4
CST 371  Embedded Systems Development I  4
EE 321  Electronics I-Introduction to Amplifiers and Semiconductor Devices  4
PHY 221  General Physics with Calculus  4
Total 16

Senior Year  Winter
CST 321  Introduction to Microprocessors  5
CST 372  Embedded Systems Development II  3
PHY 222  General Physics with Calculus  4
WRI 327  Advanced Technical Writing  3
Total 15

Senior Year  Spring
CST 331  Microprocessor Peripheral Interfaces  5
CST 351  Advanced PLD Circuits  3
CST 373  Embedded Systems Development III  2
PHY 223  General Physics with Calculus  4
Humanities elective  3
Total 17

*  Technical elective: CST 136, CST 415, or CST 407.
**  Electives: MATH 253N or MATH 465. MATH 341 or MATH 321 are also acceptable provided the student earns a total of 36 credits in Math and Science.
+  OR  Senior Project:  CST 334(1), CST 412(3), CST 422(3), CST 432(2)

Associate of Engineering in Computer Engineering Technology

Curriculum

Required courses and recommended terms during which they should be taken:

Freshman Year  Fall
CST 103  Introduction to Computer Systems I  2
CST 162  Introduction to Digital Logic  4
MATH 111  College Algebra  4
WRI 121  English Composition  3
Social Science elective  3
Total 16

Freshman Year  Winter
CST 104  Introduction to Computer Systems II  1
CST 116  C++ Programming I  4
CST 130  Computer Organization  3
MATH 112  Trigonometry  4
WRI 122  English Composition  3
Total 15

Freshman Year  Spring
CST 105  Introduction to Computer Systems III  1
CST 126  C++ Programming II  4
CST 131  Computer Architecture  3
MATH 251  Differential Calculus  4
SPE 111  Fundamentals of Speech  3
Total 15

Sophomore Year  Fall
CST 133  Digital Electronics II – Sequential Logic w HDL  4
CST 250  Computer Assembly Language  4
MATH 252  Integral Calculus  4
PSY 201  Psychology  3
WRI 227  Technical Report Writing  3
Total 18

Sophomore Year  Winter
CST 204  Introduction to Microcontrollers  4
EE 221  Circuits I – DC and 1st Order Transient Analysis  4
CST 231  Computer Design with Programmable Logic  3
CST 232  Computer Design with Programmable Logic Laboratory  1
MATH 254N  Vector Calculus I  4
Total 16

Sophomore Year  Spring
CST 313  Computer Software Techniques  3
EE 223  Circuits II – AC and 2nd Order Transient Analysis  4
SPE 321  Small Group and Team Communication  3
Advanced Math elective**  4
Humanities elective  3
Total 17
Concurrent Degree
The CSET Department provides the opportunity for the interested student to earn a bachelor's degree in computer engineering technology and software engineering technology concurrently. Such concurrent degree holders are highly sought after in industry since they know and understand both the hardware and software aspects of computers. The purpose of the concurrent CET/SET Degree Program is to challenge the brightest and most motivated students to become even better prepared for the job market, extending their time in college by an additional year. To obtain both degrees, students must complete the following list of courses along with the courses required for the Bachelor of Science degree in Computer Engineering Technology with the exception of CST 315, WRI 327, the CST elective and the MATH elective.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CST 136</td>
<td>Object-Oriented Programming with C++</td>
<td>4</td>
</tr>
<tr>
<td>CST 211</td>
<td>Data Structures</td>
<td>4</td>
</tr>
<tr>
<td>CST 229</td>
<td>Introduction to Grammars</td>
<td>4</td>
</tr>
<tr>
<td>CST 238</td>
<td>Graphical User Interface Programming</td>
<td>4</td>
</tr>
<tr>
<td>CST 240</td>
<td>UNIX</td>
<td>3</td>
</tr>
<tr>
<td>CST 320</td>
<td>Compiler Methods</td>
<td>4</td>
</tr>
<tr>
<td>CST 324</td>
<td>Database Systems and Design</td>
<td>4</td>
</tr>
<tr>
<td>CST 334</td>
<td>Project Proposal</td>
<td>1</td>
</tr>
<tr>
<td>CST 352</td>
<td>Operating Systems</td>
<td>4</td>
</tr>
<tr>
<td>CST 412</td>
<td>Senior Development Project</td>
<td>3</td>
</tr>
<tr>
<td>CST 422</td>
<td>Senior Development Project</td>
<td>3</td>
</tr>
<tr>
<td>CST 432</td>
<td>Senior Development Project</td>
<td>2</td>
</tr>
<tr>
<td>CST 415</td>
<td>Computer Networks</td>
<td>4</td>
</tr>
<tr>
<td>CST 465</td>
<td>Technical electives*</td>
<td>6</td>
</tr>
<tr>
<td>WRI 350</td>
<td>Documentation Development</td>
<td>3</td>
</tr>
</tbody>
</table>

* One elective must be a CET hardware technical elective—CST 407.
* One elective must be a SET software technical elective—CST 346, CST 356, CST 405, a Software CST 407, CST 425, CST 426, CST 476, or CST 465.
** MATH 321, MATH 322, MATH 341, MATH 342, or MATH 451.

Embedded Systems Engineering Technology

Degrees Offered
Bachelor of Science in Embedded Systems Engineering Technology

Required Student Equipment
Successful completion of this degree requires intensive, hands-on use of computers. Therefore, all students are required to own their own computer. To ensure compatibility with campus-wide computers and networks, students should consult a department faculty member for a specification sheet. Financial aid may be available to help defray the cost of this equipment. Please consult the Financial Aid Office at OIT.

Career Opportunities
The Department of Computer Systems Engineering Technology offers a Bachelor of Science degree in Embedded Systems Engineering Technology (ESET) designed to build and enhance student's knowledge and skills in this high demand field. Embedded systems play an important role in society. They are the products that contain computing capabilities which are found throughout a wide spectrum of applications. Examples of embedded systems can be found in areas ranging from the entertainment industry to office systems; health care to telecommunications. Embedded systems encompass such diverse products as interactive multimedia, printers, medical equipment, avionics equipment, kitchen appliances, mobile phones, and automotive engine management units. Engineering and technological challenges abound in the design and development of such innovative products due to the high level integration of hardware and software. As they become more complex and time to market shrinks there is increasing need for skill and creativity on the part of the Embedded System Engineering Technology graduate.

If you want to:
• develop skills in design and implement firmware for embedded systems,
• expand knowledge and apply new ideas in practical design,
• gain hands-on experience in embedded system design,
• bridge the gap between software and hardware design,
• enhance your career opportunities in a variety of high demand areas of industrial applications.

then the Embedded Systems Engineering Technology Program is the place for you.

Objective of the Curriculum
The goal of the Embedded Systems Program is to prepare students with the skills demanded by real-world industrial applications. Key to this process is the direct involvement of the embedded systems industries. Specific areas of preparation include:
• Embedded systems design methods—methods and techniques specific to the creation of an embedded system that integrates both software and hardware to fulfill a set of requirements.
• Software engineering methods—methods specific to development of software for embedded systems, including implementation, maintenance and testing.
• Systems software development—device driver development, multiprocessing control systems, and the software necessary to directly access and manipulate hardware.
• Architectural elements of embedded systems—methods and techniques for designing and implementing hardware components for embedded systems such as application-specific integrated circuits and System-On-a-Chip (SoC) technology.
• Real-time high-reliability and high-availability processing—methods and techniques necessary for understanding, evaluating and addressing quality attributes most often associated with embedded systems such as real-time deadlines, high availability, survivability, and safety.
• Data communications—methods and techniques for developing distributed systems within embedded environments that use physical or wireless networking.
Cooperative Field Experience
The cooperative program includes work experience during the junior and senior years. The co-op period is an employment arrangement with an employer in the area of the student’s major field with normal salary and academic credit. These arrangements are made on an individual basis and the student is under no obligation to accept permanent employment with any previous co-op employer.

Bachelor of Science in Embedded Systems Engineering Technology

Curriculum
Required courses and recommended terms during which they should be taken:

Freshman Year Fall
CST 103 Introduction to Computer Systems I 2
CST 162 Introduction to Digital Logic 4
MATH 111 College Algebra 4
WRI 121 English Composition 3
Total 16

Freshman Year Winter
CST 104 Introduction to Computer Systems II 1
CST 116 C++ Programming I 4
CST 130 Computer Organization 3
MATH 112 Trigonometry 4
WRI 122 English Composition 3
Total 15

Freshman Year Spring
CST 105 Introduction to Computer Systems III 1
CST 126 C++ Programming II 4
CST 131 Computer Architecture 3
MATH 251 Differential Calculus 4
SPE 111 Fundamentals of Speech 3
Total 15

Sophomore Year Fall
CST 211 Data Structures 4
EE 223 Circuits II – AC and 2nd Order Transient Analysis 4
SPE 321 Small Group and Team Communication 3
PSY 201 Psychology 3
WRI 227 Technical Report Writing 3
Total 17

Junior Year Fall
CST 315 Embedded Sensor Interfacing and IO 4
CST 337 Embedded System Architecture 4
CST 371 Embedded Systems Development I 4
PHY 221 General Physics with Calculus 4
Total 16

Junior Year Winter
CST 345 Hardware/Software Co-Design 4
CST 372 Embedded Systems Development II 3
PHY 222 General Physics with Calculus 4
MATH 465 Mathematical Statistics 4
Total 15

Senior Year Fall
CST 343 Senior Development Project 2
CST 456 System On a Chip Design 4
IMGT 345 Engineering Economy 3
Humanities elective 3
Social Science elective 3
Total 16

Senior Year Winter
CST 422 Senior Development Project 3
CST 457 Embedded Networking 4
CST 456 Embedded System Testing 4
IMGT 345 Engineering Economy 3
Humanities elective 3
Total 17

Senior Year Spring
CST 432 Senior Development Project 2
CST 466 Embedded System Security 3
PSY 347 Organizational Behavior 3
CSET Technical elective 3
Humanities elective 3
Total 14

Software Engineering Technology

Degrees Offered
Bachelor of Science in Software Engineering Technology
Associate of Engineering in Software Engineering Technology

Students who complete the curriculum requirements in Software Engineering Technology will be qualified and knowledgeable in the establishment and use of sound engineering principles (methods) in order to create software of all types that is reliable and works on real machines.

Required Student Equipment
Successful completion of this degree requires intensive, hands-on use of computers. Therefore, all students are required to own their own computer. To ensure compatibility with campus-wide computers and networks, students should consult a department faculty member for a specification sheet. Financial aid may be available to help defray the cost of this equipment. Please consult the Financial Aid Office at OIT.

Career Opportunities
Bachelor of Science in Software Engineering Technology degree graduates find employment as software engineers, systems engineers, systems analysts, programmer/analysts, researchers and assistants, consultants, customer engineers, etc., responsible for the application, design, development, and implementation of software in all areas of industry, government and education.

Software engineering technologists’ career paths will be many and varied. They may concentrate on hardware-support activities such as new design/development, testing, customer service and the like. They may concentrate on software specification, design, construction and testing through implementation and maintenance.

Graduates may get involved with administrative or project management by beginning as a member of an applications development team and progressing into management. They may pursue careers in product develop-
ment, marketing, sales, design, and support. Students completing the requirements for the Associate of Engineering degree should consider themselves as entry-level trainees in the careers mentioned.

**High School Preparation**
Coursework in computer science, mathematics, and physical science will aid students in their progress in this program.

**Software Engineering Bachelor’s Program Curriculum Mission and Objectives**
The mission of the Software Engineering Technology (SET) Degree Program within the Computer Systems Engineering Technology (CSET) Department at Oregon Institute of Technology is to prepare students for productive careers in industry and government by providing an excellent education incorporating industry-relevant, applied laboratory based instruction in both the theory and application of software engineering. The program is to serve a constituency consisting of our students, high-technology industry and the citizens of Oregon. Major components of the SET Program’s mission in the CSET Department are:

- To educate a new generation of software engineering technology students to meet current and future industrial challenges and emerging software trends.
- To promote a sense of scholarship, leadership and professional service among graduates.
- To enable students to create, develop, apply and disseminate knowledge within the software development environment.
- To expose students to cross-disciplinary educational programs.
- To provide government and high tech industry employers with graduates in software engineering and related professions.

To fulfill its mission, the SET Program has the following objectives:

1. Graduates of the Software Engineering Technology (SET) Program will have a thorough understanding of the key principles and practices of applied software engineering, including possessing the ability to identify, analyze, test and solve non-trivial software engineering technical problems.
2. Graduates of the SET Bachelor’s Programs will possess a firm foundation in the scientific, mathematical and engineering principles that support the computing discipline of software engineering technology.
3. Graduates of the SET Bachelor’s Program will have developed a broad base of skills preparing them to function as a software practitioner. They will practice with ethical and professional responsibility; recognize the need for, and have the ability to engage in, continual lifelong learning as it pertains to advances in technology; and have the ability to function and communicate effectively and successfully, both individually and within multi-disciplinary teams.

Graduates of the SET Program will have the means necessary to acquire practical and analytical skills for employment within a technical environment.

**Software Engineering Associate Program Mission and Objectives**
The mission of the Software Engineering Technology (SET) Associate Degree program within the Computer Systems Engineering Technology (CSET) Department at Oregon Institute of Technology is to prepare students for entry level careers in the software industry and government by providing applied laboratory based instruction. The program is to serve a constituency consisting of our students, high-technology industry and the citizens of Oregon. Major components of the SET program’s mission in the CSET Department are:

- To provide a new generation of Software Engineering Technology students with a solid background in computer programming.
- To enable our students to create, develop and apply knowledge within a technical software environment.
- To provide government and high tech industry employers with entry level graduates in computer programming and related professions.

**Associate Program Objectives**
To fulfill its mission, the SET Associate Program has the following objectives:

1. Graduates of the Software Engineering Technology (SET) associate program will have a thorough understanding of the key principles and practices of computer programming. (Mission 1 and 3)
2. Graduates of the SET associate program will have developed a broad base of skills preparing them to function as an entry level computer programmer. They will practice with ethical and professional responsibility; recognize the need for, and have the ability to engage in, continual life-long learning as it pertains to advances in programming; and have the ability to function and communicate effectively and successfully. (Mission 1 and 3)
3. Graduates of SET associate program will have the means necessary to acquire practical skills for employment within a technical environment. (Mission 2)

**Cooperative Field Experience**
The cooperative program includes work experience usually during the junior and senior years. The co-op period would be an employment arrangement with an employer in the area of the student’s major field with normal salary and academic credit. These arrangements are made on an individual basis, and the student is under no obligation to accept permanent employment with any previous cooperating employer. A student must be ready to enter the sophomore year in Software Engineering Technology to be considered for this program.

**Accreditation**
The Bachelor of Science in Software Engineering Technology Program is accredited by the Technology Accreditation Commission (TAC) of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700. ABET is a specialized accrediting board recognized by the Council for Higher Education and/or the Secretary of the U.S. Department of Education.
## Degree Requirements

Associate of Engineering Technology degree students must complete 97 credit hours as prescribed by the curriculum outline. The Bachelor of Science in Software Engineering Technology degree requires 186 credit hours as prescribed by the curriculum outline.

### Bachelor of Science in Software Engineering Technology

#### Curriculum

Required courses and recommended terms during which they should be taken:

<table>
<thead>
<tr>
<th>Freshman Year Fall</th>
<th>CST 104</th>
<th>Introduction to Computer Systems II</th>
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<tbody>
<tr>
<td></td>
<td>CST 116</td>
<td>C++ Programming I</td>
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<td>C++ Programming II</td>
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<td>CST 131</td>
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<tr>
<td></td>
<td>CST 223</td>
<td>Concepts of Programming Languages</td>
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<th>Sophomore Year Winter</th>
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<tr>
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<td>CST 236</td>
<td>Software Systems Testing</td>
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<td>Software Design Patterns</td>
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<td>MATH 327</td>
<td>Discrete Mathematics</td>
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<td>CST 316</td>
<td>Software Process Management</td>
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<td>CST 324</td>
<td>Database Systems and Design</td>
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<td>General Physics with Calculus</td>
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<td>Small Group and Team Communication</td>
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<td>Software Design and Implementation II</td>
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<td>CST 352</td>
<td>Operating Systems</td>
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<td>PSY 201</td>
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<td>CST 415</td>
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<td>MATH 465</td>
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* Algebra-based General Physics, PHY 201, PHY 202, PHY 205, may be substituted with adviser consent.
** Must choose from the following technical electives: • CST 311 Advanced Data Structure and Algorithm Analysis • CST 328 Computer Graphics • CST 338 Computer Modeling and Simulation • CST 340 Advanced UNIX • CST 390 Co-op Field Practice • CST 407 Seminar • CST 418 Data Communications and Networks • CST 425 Advanced Networks and Telecommunications • CST 426 Introduction to Artificial Intelligence • CST 436 Robotics, CST 442 Application Directed Architecture • CST 462 Advanced Operating Systems • CST 490 Co-op Field Practice • MATH 254N Sequences, Series and Topics in Vector Calculus • MATH 232 Applied Differential Equations • MATH 322 Applied Differential Equations • MATH 451 Numerical Methods.

### Associate of Engineering in Software Engineering Technology

#### Curriculum

Required courses and recommended terms during which they should be taken:

<table>
<thead>
<tr>
<th>Freshman Year Fall</th>
<th>CST 103</th>
<th>Introduction to Computer Systems I</th>
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<td>CST 162</td>
<td>Introduction to Digital Logic</td>
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<td>MATH 111</td>
<td>College Algebra</td>
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</tr>
<tr>
<td></td>
<td>CST 130</td>
<td>Computer Organization</td>
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<td>MATH 251</td>
<td>Differential Calculus</td>
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<td>SPE 111</td>
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<th>CST 136</th>
<th>Object-Oriented Programming with C++</th>
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<td></td>
<td>MATH 252</td>
<td>Integral Calculus</td>
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<tr>
<th>Sophomore Year Winter</th>
<th>CST 211</th>
<th>Data Structures</th>
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<tr>
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<td>CST 236</td>
<td>Software Systems Testing</td>
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<td></td>
<td>CST 240</td>
<td>Unix</td>
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<td>PHY 221</td>
<td>General Physics with Calculus</td>
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<th>CST 238</th>
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<td>Software Design Patterns</td>
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<td>PSY 201</td>
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</table>

* See your adviser for acceptable elective classes
Dental Hygiene Department

Jill Schultz, Interim Department Chair
Office: Semon Hall, 214

Professor: J. Schultz
Associate Professor: J. Cope
Instructors: E. Gordon

Degrees Offered
Bachelor of Science in Dental Hygiene
Associate of Applied Science in Dental Hygiene (La Grande)

The bachelor’s degree program prepares the dental hygiene student for entry into the dental hygiene profession. Upon successful completion of the program, the graduate is eligible to apply for examination and state licensure.

Accreditation
The dental hygiene curriculum is fully accredited by the American Dental Association Commission on Dental Accreditation, a specialized accrediting board recognized by the Council for Higher Education and/or the Secretary of the U.S. Department of Education. The program is recognized by the Oregon Board of Dental Examiners, Oregon Dental Association, and the Oregon Dental Hygiene Association.

Mission Statement
The mission of the Oregon Institute of Technology Dental Hygiene Program is to provide a program of study that prepares dental hygiene students to become knowledgeable, effective, and ethical participants in their profession, and to be committed to lifelong learning.

Career Opportunities
The registered dental hygienist has the opportunity to pursue a variety of career options such as research, public health, education, marketing, or clinical practice. Dental hygienists are most commonly employed in private dental offices but may provide oral health care services in hospitals and nursing homes, private and state institutions, the armed services, school systems, public health departments, and private industry. Employment opportunities exist abroad with the Peace Corps, World Health Organization, foreign governments, and in private practice.

Student Preparation
A science background is beneficial to those entering any health sciences profession. It is recommended that the student considering a career in dental hygiene take a college bound course of study in high school that includes algebra, chemistry, and biology or human anatomy and physiology.

Admissions Procedures and Requirements
Any student who meets the general admissions requirements may enroll in Pre-Dental Hygiene (freshman year). A limited number of seats are available in the professional courses (sophomore, junior, and senior years). Students are selected to enter the professional courses through an application process. Students who meet the required criteria may submit an application for admission to the Dental Hygiene Program.

The application deadline is April 1 of the year of enrollment. To be eligible for admission into the Dental Hygiene Program, applicants must meet the following criteria:

1. Completion of Introduction to Dental Hygiene (DH 100 and DH 101 on campus or DHE 100 online) is required prior to application. All other freshman Pre-Dental Hygiene courses must be successfully completed and/or in progress at the time of application. A minimum GPA of 3.0 is required.
2. A completed Dental Hygiene Application for Admission and related forms must be sent directly to the Dental Hygiene Department chair by April 1 of the year of enrollment. Detailed information and forms can be found on the OIT dental hygiene Web site. There is a $50.00 application fee.
3. All applicants are required to submit an official Application for Admission to OIT, accompanied by a $50 non-refundable fee and official transcripts of each college or university attended. Acceptance to the Dental Hygiene Program is contingent upon acceptance to OIT. However, acceptance to OIT is independent of acceptance to the Dental Hygiene Program and all applicants will be admitted as Pre-Dental Hygiene majors.
4. All students admitted to the Dental Hygiene Program will be required to purchase a specific laptop computer designated by the Dental Hygiene Department.

Bachelor of Science in Dental Hygiene

Curriculum
Required courses and recommended terms during which they should be taken:

Pre-Dental Hygiene
Freshman Year
Fall
BIO 105  Human Anatomy and Physiology I  4
CHE 101  Elementary Chemistry  3
CHE 104  Elementary Chemistry Laboratory  1
DH 100  Introduction to Dental Hygiene I  1
MATH 105  Collegiate Mathematics  or
MATH 111  College Algebra  4
WRI 121  English Composition  3
Total 16

Winter
BIO 106  Microbiology  4
BIO 232  Human Anatomy and Physiology II  4
CHE 102  Elementary Chemistry  3
CHE 105  Elementary Chemistry Laboratory  1
DH 101  Introduction to Dental Hygiene II  1
WRI 122  English Composition  3
Total 16

Spring
BIO 233  Human Anatomy and Physiology III  4
CHE 103  Elementary Chemistry  3
CHE 106  Elementary Chemistry Laboratory  1
SOC 204  Introduction to Sociology  3
SPE 111  Fundamentals of Speech  3
WRI 123  English Composition  or
WRI 227  Technical Report Writing  3
Total 17

Freshman Year

Curriculum
Freshman Year
Fall
BIO 105  Human Anatomy and Physiology I  4
CHE 101  Elementary Chemistry  3
CHE 104  Elementary Chemistry Laboratory  1
DH 100  Introduction to Dental Hygiene I  1
MATH 105  Collegiate Mathematics  or
MATH 111  College Algebra  4
WRI 121  English Composition  3
Total 16

Winter
BIO 106  Microbiology  4
BIO 232  Human Anatomy and Physiology II  4
CHE 102  Elementary Chemistry  3
CHE 105  Elementary Chemistry Laboratory  1
DH 101  Introduction to Dental Hygiene II  1
WRI 122  English Composition  3
Total 16

Spring
BIO 233  Human Anatomy and Physiology III  4
CHE 103  Elementary Chemistry  3
CHE 106  Elementary Chemistry Laboratory  1
SOC 204  Introduction to Sociology  3
SPE 111  Fundamentals of Speech  3
WRI 123  English Composition  or
WRI 227  Technical Report Writing  3
Total 17
### Professional Courses

#### Sophomore Year  Fall
- DH 221 Dental Hygiene Clinical Practice and Seminar I 4
- DH 226 Head and Neck Anatomy 2
- DH 240 Prevention I 3
- DH 275 Dental Ethics 1
- CHE 210 Clinical Pharmacology 3
- SPE 321 Small Group and Team Communication 3
**Total**: 16

#### Sophomore Year  Winter
- DH 222 Dental Hygiene Clinical Practice and Seminar III 3
- DH 237 Oral Histology and Embryology 2
- DH 241 Prevention II 3
- DH 244 General and Oral Pathology 3
- DH 252 Oral Radiology I 3
- PSY 311 Human Growth and Development I 3
**Total**: 18

#### Junior Year  Fall
- DH 321 Dental Hygiene Clinical Practice and Seminar IV 3
- DH 340 Prevention IV 3
- DH 354 Periodontology 3
- DH 381 Community Dental Health II 2
- PST 301 Counseling Techniques 4
**Total**: 15

#### Junior Year  Winter
- DH 322 Dental Hygiene Clinical Practice and Seminar V 3
- DH 341 Prevention V 3
- DH 351 Pain Management I 2
- DH 366 Dental Anatomy 2
- DH 382 Community Dental Health III 2
**Total**: 15

#### Junior Year  Spring
- DH 323 Dental Hygiene Clinical Practice and Seminar VI 6
- DH 344 Advanced General and Oral Pathology 3
- DH 352 Pain Management II 3
- DH 363 Dental Materials 3
- DH 370 International Externship (optional) 1
- DH 383 Community Dental Health IV 3
**Total**: 16/17

#### Senior Year  Fall
- BUS 331 Personal Finance 3
- DH 371 International Externship (optional) 1
- DH 421 Dental Hygiene Clinical Practice and Seminar VII 4
- DH 461 Restorative Dentistry I 2
- DH 475 Dental Hygiene Research Methods I 2
- MATH 243 Introductory Statistics 4
**Total**: 15/16

#### Senior Year  Winter
- DH 372 International Externship (optional) 1
- DH 422 Dental Hygiene Clinical Practice and Seminar VIII 5
- DH 462 Restorative Dentistry II 2
- DH 476 Dental Hygiene Research Methods II 2
**Total**: 15

### Graduation Requirements

The Bachelor of Science in Dental Hygiene Degree requires 191 credit hours as prescribed by the curriculum outline. Students must meet minimum competency in dental hygiene courses and be in good standing within the Dental Hygiene Program.

### Associate of Applied Science in Dental Hygiene

#### Curriculum

Required courses and recommended terms during which they should be taken:

**Pre-Dental Hygiene**

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<td>Collegiate Mathematics or MATH 111 College Algebra 4</td>
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**Total**: 17

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<td>CHE 102</td>
<td>Elementary Chemistry 3</td>
</tr>
<tr>
<td>CHE 105</td>
<td>Elementary Chemistry Lab I 1</td>
</tr>
<tr>
<td>SPE 111</td>
<td>Fundamentals of Speech 3</td>
</tr>
<tr>
<td>WRI 122</td>
<td>English Composition 3</td>
</tr>
</tbody>
</table>
**Total**: 18

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 210</td>
<td>Clinical Pharmacology 3</td>
</tr>
<tr>
<td>DHE 205</td>
<td>Oral and Dental Anatomy 4</td>
</tr>
<tr>
<td>DHE 211</td>
<td>Principles of Dental Hygiene I 3</td>
</tr>
<tr>
<td>DHE 221</td>
<td>Dental Hygiene Clinical Practice I 2</td>
</tr>
<tr>
<td>DHE 252</td>
<td>Oral Radiology I 3</td>
</tr>
<tr>
<td>SPE 321</td>
<td>Small Group and Team Communication 3</td>
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</table>
**Total**: 18

<table>
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<tr>
<th>Sophomore Year</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHE 212</td>
<td>Principles of Dental Hygiene II 3</td>
</tr>
<tr>
<td>DHE 222</td>
<td>Dental Hygiene Clinical Practice II 4</td>
</tr>
<tr>
<td>DHE 227</td>
<td>General Pathology 3</td>
</tr>
<tr>
<td>DHE 253</td>
<td>Oral Radiology II 2</td>
</tr>
<tr>
<td>DHE 282</td>
<td>Medical/Dental Emergency Procedures 3</td>
</tr>
<tr>
<td>DHE 392</td>
<td>Dental/Ethical Specializations 2</td>
</tr>
</tbody>
</table>
**Total**: 18

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHE 311</td>
<td>Principles of Dental Hygiene IV 3</td>
</tr>
<tr>
<td>DHE 321</td>
<td>Dental Hygiene Clinical Practice IV 4</td>
</tr>
<tr>
<td>DHE 333</td>
<td>Periodontal Therapy 3</td>
</tr>
<tr>
<td>DHE 351</td>
<td>Dental Anesthesiology 3</td>
</tr>
</tbody>
</table>
**Total**: 16

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHE 312</td>
<td>Principles of Dental Hygiene V 3</td>
</tr>
<tr>
<td>DHE 320</td>
<td>Dental Materials and Chairside Assisting 3</td>
</tr>
<tr>
<td>DHE 322</td>
<td>Dental Hygiene Clinical Practice V 4</td>
</tr>
<tr>
<td>DHE 380</td>
<td>Oral Health Planning and Care I 3</td>
</tr>
</tbody>
</table>
**Total**: 16

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHE 313</td>
<td>Principles of Dental Hygiene VI 4</td>
</tr>
<tr>
<td>DHE 323</td>
<td>Dental Hygiene Clinical Practice VI 5</td>
</tr>
<tr>
<td>DHE 381</td>
<td>Oral Health Planning and Care II 4</td>
</tr>
</tbody>
</table>
**Total**: 16
Bachelor's Degree Completion Outreach Program

This program offers dental hygienists who have earned an associate's degree the opportunity to complete a Bachelor of Science in Dental Hygiene. The degree may be completed at OIT or through an online, Web-based distance-learning program.

Dental hygienists who have graduated with an associate's degree from an accredited dental hygiene program may be eligible to apply to the bachelor's degree completion program. OIT will make every effort to give maximum consideration to the transfer work presented at time of application. Typically, most professional and related science requirements are accepted. Additional coursework may be necessary to meet OIT general education requirements and a minimum of 45 credit hours must be completed through OIT to satisfy residency requirements.

Admission Requirements

1. Complete the Dental Hygiene Degree Completion Application. Enclose a check for $100 payable to Oregon Institute of Technology.
3. Mail your application, check, and copy of board results to the Distance Education Office.
4. Mail official transcripts from all colleges you have attended directly to the Distance Education Office. Transfer courses will be evaluated to determine course equivalency of professional, science, and general education courses.

To apply, go to www.oit.edu/dist, print the Admissions Application and Check Sheet, and submit all required information to the Distance Education Department.

Courses Granted for Licensure

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DH 100/101</td>
<td>Introduction to Dental Hygiene I, II</td>
<td>2</td>
</tr>
<tr>
<td>DH 226</td>
<td>Head and Neck Anatomy</td>
<td>2</td>
</tr>
<tr>
<td>DH 237</td>
<td>Oral Histology and Embryology</td>
<td>2</td>
</tr>
<tr>
<td>DH 267</td>
<td>Emergency Procedures</td>
<td>3</td>
</tr>
<tr>
<td>DH 244</td>
<td>General and Oral Pathology</td>
<td>3</td>
</tr>
<tr>
<td>DH 221/222/223</td>
<td>Dental Hygiene Clinical Practice and Seminar I, II, and III</td>
<td>11</td>
</tr>
<tr>
<td>DH 240/241/242</td>
<td>Prevention I, II, and III</td>
<td>9</td>
</tr>
<tr>
<td>DH 252/253</td>
<td>Oral Radiology I and II</td>
<td>5</td>
</tr>
<tr>
<td>DH 254</td>
<td>Introduction to Periodontology</td>
<td>1</td>
</tr>
<tr>
<td>DH 275</td>
<td>Dental Ethics I</td>
<td>1</td>
</tr>
<tr>
<td>DH 321/322/323</td>
<td>Dental Hygiene Clinical Practice and Seminar IV, V, and VI</td>
<td>12</td>
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<tr>
<td>DH 340/341</td>
<td>Prevention IV and V</td>
<td>6</td>
</tr>
<tr>
<td>DH 344</td>
<td>Advanced General and Oral Pathology</td>
<td>3</td>
</tr>
<tr>
<td>DH 354</td>
<td>Periodontology</td>
<td>3</td>
</tr>
<tr>
<td>DH 363</td>
<td>Dental Materials</td>
<td>3</td>
</tr>
<tr>
<td>DH 366</td>
<td>Dental Anatomy</td>
<td>2</td>
</tr>
<tr>
<td>DH 380–383</td>
<td>Community Dental Health I, II, III and IV</td>
<td>7</td>
</tr>
<tr>
<td>DH 421/422/423</td>
<td>DH Clinical Practice and Seminar VII, VIII, IX</td>
<td>14</td>
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OIT Degree Completion Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BUS 317</td>
<td>Health Care Management</td>
<td>3</td>
</tr>
<tr>
<td>BUS 331</td>
<td>Personal Finance</td>
<td>3</td>
</tr>
<tr>
<td>DH 351</td>
<td>Pain Management I*</td>
<td>2</td>
</tr>
<tr>
<td>DH 352</td>
<td>Pain Management II*</td>
<td>3</td>
</tr>
<tr>
<td>DH 401</td>
<td>Overview of Advanced</td>
<td>3</td>
</tr>
<tr>
<td>DH 450</td>
<td>Instructional Methods</td>
<td>3</td>
</tr>
<tr>
<td>DH 453</td>
<td>Current Issues in Dental Hygiene</td>
<td>3</td>
</tr>
<tr>
<td>DH 454</td>
<td>Dental Practice Management</td>
<td>3</td>
</tr>
<tr>
<td>DH 455</td>
<td>Dental Hygiene Research</td>
<td>3</td>
</tr>
<tr>
<td>DH 470</td>
<td>Community Program Planning</td>
<td>3</td>
</tr>
<tr>
<td>MATH 243</td>
<td>Introductory Statistics</td>
<td>4</td>
</tr>
<tr>
<td>SPE 321</td>
<td>Small Group and Team Communication</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Communication elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Humanities elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Humanities elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Social Science elective</td>
<td>3</td>
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<tr>
<td></td>
<td>Elective approved by adviser</td>
<td>3</td>
</tr>
</tbody>
</table>

* Credits may be granted for additional specialty licensure exams.

Graduation Requirements:

The following requirements must be met to earn a bachelor's degree in dental hygiene from Oregon Institute of Technology:

- Transfer your dental hygiene professional courses.
- Complete general education courses required for a bachelor's degree.
- Complete the bachelor's degree completion courses.
- Complete 60 credits of upper-division (300-400 level) coursework. (You will be awarded some upper-division credit for your transferred professional courses.)
- Complete at least 45 credits from OIT.

Additional required courses

(Transfer or OIT)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 105</td>
<td>Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>BIO 231</td>
<td>Anatomy and Physiology I</td>
<td>4</td>
</tr>
<tr>
<td>BIO 232</td>
<td>Anatomy and Physiology II</td>
<td>4</td>
</tr>
<tr>
<td>BIO 233</td>
<td>Anatomy and Physiology III</td>
<td>4</td>
</tr>
<tr>
<td>CHE 101/104</td>
<td>Elementary Chemistry/Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>CHE 302/305</td>
<td>Elementary Chemistry/Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>CHE 103/106</td>
<td>Elementary Chemistry/Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>CHE 210</td>
<td>Clinical Pharmacology</td>
<td>3</td>
</tr>
<tr>
<td>MATH 105</td>
<td>Collegiate Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 111</td>
<td>College Algebra</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Psychology elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Psychology elective</td>
<td>3</td>
</tr>
</tbody>
</table>

SOC 204 | Introduction to Sociology 3
SPE 111 | Fundamentals of Speech 3
WRI 121 | English Composition 3
WRI 122 | English Composition 3
WRI 123 | English Composition 3
WRI 227 | Technical Report Writing 3

To apply, go to www.oit.edu/dist, print the Admissions Application and Check Sheet, and submit all required information to the Distance Education Department.
Electrical Engineering and Renewable Energy Department

Paul Dingman, Department Chair
Office: Purvine Hall, 260
Phone: 885-1554
E-mail: paul.dingman@oit.edu

David Pocock, Program Director, Electrical Engineering in Klamath Falls
Mateo Aboy, Program Director, Electronics Engineering Technology in Portland
Robert Bass, Program Director, Renewable Energy Systems in Portland
Jamie Zipay, Program Director, Renewable Energy Systems in Klamath Falls

Associate Professors: M. Aboy, P. Dingman, N. Kincheloe, D. Pocock, M. Timmerman, J. Zipay
Assistant Professors: R. Bass, G. Peter

Degrees Offered
Bachelor of Science in Electrical Engineering (Klamath Falls Campus)
Bachelor of Science in Electronics Engineering Technology (Portland Campus)
Bachelor of Science in Renewable Energy Systems (Klamath Falls and Portland campuses)

Electrical Engineering

Degree Offered
A Bachelor of Science in Electrical Engineering (BSEE) degree is awarded by OIT’s Klamath Falls campus. A conventional four-year daytime delivery program is offered in Klamath Falls.

Unique Emphases Offered
Under the umbrella of a BSEE degree, in addition to a conventional Electrical Engineering Program, three unique emphases are also offered: biomedical engineering, optoelectronics and renewable energy systems. Each emphasis consists of three upper-division electives and a three-term team senior project in the area of interest. (All three emphases may not be offered every year.)

Career Opportunities
There are more electrical engineers in the world than any other type of engineer. This means that there are more jobs for electrical engineers than any other type of engineer. Consider the wide range of items that are produced by electrical and electronics engineers, including computers, digital cameras, cell phones, iPods, TVs, stereos, global positioning sensors, laser range finders, microwave ovens, night-vision sensors, electronic fuel injection, avionics, robotics, biomedical instruments, wireless telecommunications, and much more. An electrical engineering designs, builds, analyzes, tests, integrates, markets, and field services all of these products.

Electrical engineering at OIT is concerned with theory, concepts, and practices of applied electrical and electronics engineering. Emphasis is placed on the practical application of engineering knowledge. As a result, the electrical engineering graduate possesses a combination of theoretical and practical understanding and requires minimal on-the-job training. The OIT BSEE graduate is also well prepared to attend graduate school. Graduates of the Electrical Engineering Program fulfill a wide range of functions within industry. Bachelor degree graduates are currently placed in positions such as component and system design, field engineering, manufacturing engineering, sales or market engineering, test engineering, and quality control engineering.

Bachelor graduates with the renewable energy systems emphasis will be qualified as field engineers, marketing engineers or test engineers in the rapidly expanding field of renewable energy. Bachelor graduates with the optoelectronics emphasis will be qualified for employment in optical instrumentation development and manufacturing, laser systems and semiconductor equipment manufacturing, field engineering and telecommunications. Graduates with the biomedical engineering emphasis will be especially qualified for employment with medical equipment manufactures and as clinical engineers in hospitals.

Employers of electrical engineering graduates include research and development laboratories, electronic equipment manufacturers, public utilities, colleges and universities, government agencies, medical laboratories and hospitals, electronic equipment distributors, semiconductor companies, and automated electronic-controlled processing companies.

Objectives
The objectives of the Electrical Engineering (EE) Program are:
1. To provide EE students with an environment, including competent faculty and well equipped laboratories, that is conducive to learning the skills needed to be immediately employable within broad-based electrical, electronics, computer, semiconductor, optoelectronic, renewable energy and biomedical fields.
2. To ensure that curricular offerings remain current in both theoretical and applied electrical engineering concepts and practices by maintaining active liaison with members of the EE Industrial Advisory Board, employers of EE graduates, other industrial leaders, academic colleagues, and professional organizations.
3. To develop the analytical skills, written and oral communication skills, critical thinking and problem solving abilities of students so that they may enjoy both vertical and horizontal career mobility after graduation.
4. To provide a seamless transition for community college engineering transfer students into the BSEE Program.
5. To prepare graduates to pursue continuing education in electrical engineering, optoelectronics, biomedical engineering, and related disciplines following graduation from OIT.
6. To provide the laboratory intensive, hands-on, applied-engineering, student-centered, undergraduate-focused education for which OIT is known.
Student Preparation
Students entering the Electrical Engineering Program from high school should have a minimum of: 1) Two years of high-school algebra and one year of high-school geometry and trigonometry. 2) Two years of a physical science (physics, chemistry preferred). 3) Three years of English composition. Additional mathematics, science, English, electronics, and computer languages are very helpful.

Students entering the Electrical Engineering Program by transfer are requested to contact the department concerning transfer of technical coursework. Those community college students completing the electrical engineering transfer program should receive full credit for the first two years of EE courses.

Those students with an Associate Degree in Electronics Engineering Technology will most likely have to take two or more “bridging” courses and EE 225 (Circuits III-LaPlace Transforms and Applications) in order to have all the lower-division requirements of the EE Program completed.

Accreditation
The Electrical Engineering Program is a new program at OIT. Accreditation by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700 will be sought upon graduation of the first students. ABET is a specialized accrediting board recognized by the Council for Higher Education and/or the Secretary of the U.S. Department of Education. It is necessary to have graduates from the program in order to request accreditation, however, it is retroactive once it is granted.

Degree Requirements
A rigorous curriculum in Electrical Engineering requires 184 term hours of credit, taking approximately four years to complete. Students in the EE Program must earn a grade of “C” or better in all EE courses that are prerequisites for another EE course.

Bachelor of Science in Electrical Engineering

Curriculum
Required courses and recommended terms during which they should be taken:

| Freshman Year | Fall | CHE 201 | General Chemistry | 3 |
|              |      | CHE 204 | General Chemistry Laboratory | 1 |
|              |      | EE 101  | Introduction to Engineering I | 1 |
|              |      | MATH 251 | Differential Calculus | 4 |
|              |      | WRI 121 | English Composition | 3 |
| Total        |      |         |                     | 12 |

| Freshman Year | Winter | EE 102  | Introduction to Engineering II | 1 |
|               |        | EE 131  | Digital Electronics I – Combinational Logic | 4 |
|               |        | MATH 252 | Integral Calculus | 4 |
|               |        | PHY 221 | General Physics with Calculus | 4 |
|               |        | WRI 122 | English Composition | 3 |
| Total         |        |         |                     | 16 |

| Sophomore Year | Fall | CST 116 | C++ Programming I | 4 |
|                |      | EE 221  | Circuits I – DC and 1st Order Transient Analysis | 4 |
|                |      | PHY 223 | General Physics with Calculus | 3 |
| Total          |      |         |                     | 15 |

| Sophomore Year | Winter | EE 223  | Circuits II – AC and 2nd Order Transient Analysis | 4 |
|                |        | MATH 321 | Applied Differential Equations I | 3 |
|                |        | MATH 341 | Linear Algebra I | 3 |
| Total          |        |         |                     | 16 |

| Sophomore Year | Spring | EE 225  | Circuits III – LaPlace Transforms and Applications | 4 |
|                |        | MATH 253N | Sequences and Series | 4 |
|                |        | WRI 227 | Technical Report Writing | 3 |
| Total          |        |         |                     | 17 |

| Junior Year | Fall | EE 321  | Electronics I – Introduction to Amplifiers and Semiconductor Devices | 5 |
|            |      | EE 331  | Digital Systems Design with HDL | 4 |
|            |      | EE 341  | Electricity and Magnetism with Transmission Lines | 4 |
|            |      | IMGT 345 | Engineering Economy | 3 |
| Total      |      |         |                     | 16 |

| Junior Year | Winter | EE 323  | Electronics II – Transistor Amplifiers and Analog ICs | 5 |
|            |        | EE 333  | Microcontroller Engineering | 4 |
|            |        | EE 343  | Solid-State Electronic Devices | 3 |
|            |        | EE 441  | Biomedical III - Instrumentation | 4 |
| Total      |        |         |                     | 18 |

| Senior Year | Fall | EE 411  | Senior Project I | 2 |
|            |      | EE 431  | Digital Signal Processing | 3 |
|            |      | SPE 321 | Small Group and Team Communication | 3 |
| Total      |      |         |                     | 13 |

| Senior Year | Winter | EE 412  | Senior Project II | 2 |
|            |        | EE 421  | Analog Integrated-Circuit Design | 5 |
|            |        | MATH 465 | Mathematical Statistics | 4 |
|            |        | WRI 322 | Advanced Technical Communication | 1 |
| Total      |        |         |                     | 16 |

| Senior Year | Spring | EE 401  | Communication Systems | 5 |
|            |        | EE 413  | Senior Project III | 2 |
|            |        | WRI 323 | Advanced Technical Communication | 1 |
|            |        |         | Social Science elective | 3 |
| Total      |        |         |                     | 14 |

* Requires adviser approval

NOTE: All physics, chemistry and nearly all electrical engineering courses have an associated laboratory component. See detailed course descriptions in this catalog.

Electives for Specific Emphases within BSEE Curriculum
Students may choose from the following list for their 12 credits of engineering elective courses in a specific emphasis. Transfer students may use other courses to satisfy an engineering elective. All engineering electives require the approval of a student’s academic adviser. All courses may not be offered every year.

Biomedical Emphasis
EE 441 Biomedical I - Introduction to Biomedical Engineering | 4
EE 443 Biomedical II - Signal Processing | 4
EE 445 Biomedical III - Instrumentation | 4
Optoelectronic Emphasis

EE 301 Optoelectronics I - Optoelectronic Devices and Optical Detection 4
EE 303 Optoelectronics II - Lasers 4
EE 305 Optoelectronics III - Fiber Optic Principles and Applications 4

Renewable Energy Systems Emphasis

Approved REE courses. Contact EE Program director.

General EE Electives

EE 419 Power Electronics 4
EE 423 CMOS Digital Integrated-Circuit Design 4
EE 425 Wireless Communication 4
EE 456 Control Systems Design 3

Electronics Engineering Technology

Degrees Offered
Bachelor of Science in Electronics Engineering Technology (Portland Campus)

Electronics Engineering Technology is concerned with theory, concepts, and practice of applied electronics engineering. Emphasis is placed on the practical application of engineering knowledge. As a result, the Electronics Engineering Technology graduate possesses a combination of theoretical and practical understanding and requires minimal on-the-job training.

Oregon Institute of Technology’s ABET accredited Bachelor of Science degree in Electronics Engineering Technology is conveniently offered at the OIT-Portland West Campus in order to accommodate degree-seeking professionals working for high-tech companies. The West Campus is located at the heart of the high-tech industry cluster (Silicon Forest), minutes away from companies such as Intel, Tektronix, MAXIM, Cree, Lattice, Synopsis, TriQuint, and ESI. Some of the core courses for the degree and technical electives are also available online and at the OIT-Portland East campus.

Career Opportunities

The program is designed to prepare graduates to assume engineering and technology positions in the electronics industry. Graduates of the Electronics Engineering Technology Program fulfill a wide range of functions within industry. Bachelor’s degree graduates are currently placed in positions such as component and system design, test engineering, product engineering, field engineering, manufacturing engineering, sales or market engineering, and quality control engineering. The program also provides a solid preparation for students intending to continue to graduate school to pursue master’s degrees in engineering, engineering management and MBAs.

Employers of Electronics Engineering Technology graduates include research and development laboratories, electronic equipment manufacturers, public utilities, colleges and universities, government agencies, medical laboratories and hospitals, electronic equipment distributors, semiconductor companies, and automated electronic controlled processing companies. Recent graduates have been employed at companies such as MAXIM, Tektronix, TriQuint, MSE and Intel.

Objectives

The objectives of the Electronics Engineering Technology Program are:

1. Graduates will be technically competent for immediate employment in the field of electronics. This includes having the ability to solve engineering and technology problems by applying principles of mathematics, science and engineering.

2. Graduates will be able to use modern engineering techniques and tools to identify, formulate, and solve electronics engineering technology problems.

3. Graduates will have analytical, communication, problem solving, and critical thinking skills to function effectively as members of multidisciplinary teams and as contributors to the technology workforce.

4. Graduates will demonstrate an understanding of ethical, societal, and professional responsibility, and will have an appreciation of the need for life-long learning.

Student Preparation

OIT’s Portland campus offers a degree program designed to accommodate working professionals with evening delivery of upper-division and custom bridging courses. It is especially suited for working professionals with an associate degree in Electronics Engineering Technology, Microelectronics Technology, or equivalent coursework.

Students entering the B.S. degree in Electronics Engineering Technology program by transfer are requested to contact the EET Program Director concerning transfer of technical coursework.

An accredited Associate of Applied Science (AAS) degree in Electronics or Microelectronics and Calculus-level math is a perfect preparation to start upper-division coursework. Alternatively, coursework in DC Circuit Analysis, AC Circuit Analysis, Combinational Logic (Digital Circuits), Sequential Logic (Digital Circuits), Semiconductor Devices, and other technical and general education courses provides adequate preparation.

The BSEET program has articulation agreements with the Electronics and Microelectronics programs at Portland Community College, Clackamas Community College, and Chemeketa Community College. It is recommended that students start the advising process with OIT right after they complete the first year of their AAS degree.

Accreditation

The Electronics Engineering Technology program is accredited by the Technology Accreditation Commission (TAC) of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700. ABET is a specialized accrediting board recognized by the Council for Higher Education and/or the Secretary of the U.S. Department of Education.

Degree Requirements

A rigorous curriculum in Electronics Engineering Technology requires 186 credit hours, taking a full-time student approximately four years to complete.
Bachelor of Science in Electronics Engineering Technology

Curriculum
The curriculum map below shows the required courses, recommended sequence, and recommended terms during which they should be taken for students transferring into the program with an accredited AAS degree or equivalent lower division coursework (freshman and sophomore years).

Transfer students and part-time students should contact the EET program director for a customized curriculum tailored to their individual circumstances. Students with an accredited AAS degree in Electronics Engineering Technology should receive credit for all or most of the first two years. Some bridging courses may be required.

Freshman and Sophomore Years
The degree requirements for the first two years can be fulfilled by completing an accredited Associate of Applied Science degree in Electronics Engineering Technology, Microelectronics Engineering Technology, Microelectronics Technology, Electrical Engineering Transfer, or equivalent coursework. These programs or preparative coursework should include coursework in:

Electronics and Technology Courses*
- DC Circuit Analysis
- AC Circuit Analysis
- Digital Circuits: Combinational Logic
- Digital Circuits: Sequential Logic
- Semiconductor and Transistors
- Sophomore-level Technical Electives
- C++ Programming

Mathematics and Physics*
- Differential Calculus
- Integral Calculus
- Calculus-Based Physics

Communications, Humanities and Social Science
- Communications: SPE111, WRI121, WRI122, WRI227 *
- Humanities and Social Science Electives *

Option 1: Starting with Analog Electronics, DSP and Communications
Required Time: 2.5 years (upper-division)
This option is intended for transfer students who have completed the lower-division requirements through an AAS degree or equivalent coursework and are interested in completing the upper-division requirements for BSEET degree in 2.5 additional years starting with the Analog Electronics sequence and the Circuits, Systems, DSP and Communications sequence. This option starts in Summer term with Differential Equations and LabVIEW programming.

Year 1
Junior Year Summer
RE 221 LabVIEW Programming 4
MATH 321 Differential Equations 3
Total 7

Junior Year Fall
EE 321 Electronics I - Introduction to Amplifiers and Semiconductor Devices 5
EET 371 LaPlace Transforms and Applications 5
Total 10

Junior Year Winter
EE 323 Electronics II - Transistor Amplifiers and Analog ICs 5
EET 471 Digital Signal Processing 5
Total 10

Junior Year Spring
EET 373 Operational Amplifiers and Applications 5
EET 472 Communications Systems 5
Total 10

Junior Year Summer
Technical Electives 6
Total 6

Year 2
Senior Year Fall
EET 361 Digital Systems I 5
EET 473 Analysis and Design of Analog Integrated Circuits 5
Total 10

Senior Year Winter
EET 362 Digital Systems II 5
EET 363 Introduction to Microcontrollers 5
Total 10

Senior Year Spring
EET 364 Microcontroller Systems 5
WRI 327 Advanced Technical Writing 3
MATH 254N Vector Calculus I 4
Total 12

Senior Year Summer
RE 221 LabVIEW Programming 4
MATH 321 Differential Equations 3
Total 7

Year 2
Senior Year Fall
EET 371 LaPlace Transforms and Applications 5
E 321 Electronics I-Introduction to Amplifiers and Semiconductor Devices 5
Total 10

* Note: Some of this coursework can also be completed at the OIT-Portland campus (e.g. Calculus, Physics, Electronics, WRI 227, and Gen Ed).

Option 2: Starting Digital Systems and Microcontrollers
Required Time: 2.5 to 3 years (upper-division)
This option is intended for transfer students who have completed the lower-division requirements through an AAS degree or equivalent coursework and are interested in completing the upper-division requirements for BSEET degree in 2.5 to 3 additional years starting with the Digital Systems and Microcontrollers sequences.

Year 1
Junior Year Fall
EET 458 Senior Project: Project Design 2
Total 2

Senior Year Winter
EET 465 Senior Project: Evaluation 5
Total 5

Year 3
Completion of the senior project
Senior Year Fall
EET 458 Senior Project: Project Design 2
Total 2

Senior Year Winter
EET 465 Senior Project: Evaluation 5
Total 5

AND

Year 3
Senior Year Fall
EET 458 Senior Project: Project Design 2
Total 2

Senior Year Winter
EET 465 Senior Project: Evaluation 5
Total 5

Year 3
Senior Year Fall
EET 458 Senior Project: Project Design 2
Total 2

Senior Year Winter
EET 465 Senior Project: Evaluation 5
Total 5

AND

Year 3
Senior Year Fall
EET 458 Senior Project: Project Design 2
Total 2

Senior Year Winter
EET 465 Senior Project: Evaluation 5
Total 5

AND

Year 3
Senior Year Fall
EET 458 Senior Project: Project Design 2
Total 2

Senior Year Winter
EET 465 Senior Project: Evaluation 5
Total 5

AND
Senior Year | Winter
---|---
EET 471 | Digital Signal Processing | 5
EE 323 | Electronics II – Transistor Amplifiers and Analog ICs | 5
Total | 10

Senior Year | Spring
---|---
EET 373 | Operational Amplifiers and Applications | 5
EET 472 | Communications Systems | 5
Total | 10

Senior Year | Summer
---|---
EET 358 | Senior Project: Proposal | 2
SPE 321 | Small Group and Team Communication | 3
Total | 5
AND

Year 3
Completion of the senior project

Senior Year | Fall
---|---
EET 458 | Senior Project: Project Design | 2
EET 473 | Analysis and Design of Analog Integrated Circuits | 5
Total | 7

Senior Year | Winter
---|---
EET 465 | Senior Project: Evaluation | 5
Technical Electives | 6
Humanities/Social Science Electives/ Gen Eds (if needed) | 1
Total | 11

Renewable Energy Systems

Degree Offered
Bachelor of Science in Renewable Energy Systems

A program that accommodates both full-time and part-time students is offered at the Oregon Institute of Technology’s Portland East Campus. For more information contact Dr. Robert Bass, 7726 SE Harmony Road, Portland, OR 97222-1269, phone (503) 725-3066. A conventional four-year daytime delivery program is offered at the main campus in Klamath Falls. For more information contact Associate Professor Jamie Zipay, 3201 Campus Drive, Klamath Falls, OR 97601-8801, phone (800) 422-2017. For information on beginning the Renewable Energy Systems Program or when transferring from another college or university, please contact the program director.

The Renewable Energy Systems Degree Program prepares students for the challenges of designing, promoting and implementing renewable energy systems in society’s rapidly-changing energy-related industries. Energy, in its many abundant forms, is the driving physical factor upon which industrial societies are founded. As geopolitical, environmental and geological factors act to constrain tradition resources, societies have been forced to re-think and re-develop their energy infrastructures. Renewable energy resources include solar thermal collectors, photovoltaics, ground-source heat pumps, geothermal resources, hydroelectric power, wind power, tidal and wave power, biofuels and fuel cells. OIT’s Bachelor of Science in Renewable Energy Systems prepares students for success in these rapidly developing fields.

The Renewable Energy Systems Degree Program is built upon a solid foundation in physics, chemistry, mathematics and communications. Added to this foundation are courses in electrical and mechanical engineering that establish a firm understanding of the fundamentals of energy. The engineering coursework prepares students for renewable energy-specific courses such as photovoltaics, wind power, biofuels, hydroelectric, fuel cells and solar thermal systems. These courses are then integrated into system-wide senior level courses such as energy system design, green building, renewable energy transportation systems, energy management and energy systems control.

The program is delivered in both Portland and Klamath Falls. In Portland, general education courses are provided by local community colleges while RES-specific courses are delivered by OIT at the Portland East Campus. In Klamath Falls all necessary courses can be taken from OIT.

Career Opportunities
Program graduates will enter energy careers as field engineers, energy auditors, renewable energy system integrators for homes and businesses, manufacturing engineers for green manufacturing firms, design engineers of power systems components and subsystems, as well as local and state government renewable energy inspectors and planners. Graduates of the program will be able to fulfill a wide range of career opportunities, not only within the emerging field of renewable energy, but within more traditional areas of instrumentation and control.

Career fields include
1. Renewable energy system design and planning
2. Energy policy analysis and development
3. Energy economics
4. Energy management and efficiency consulting
5. Greenhouse gas accounting and reduction
6. Assessing the social and environmental impacts of energy systems
7. Renewable energy research and development.

Graduate career placement in
1. Renewable energy manufacturing and installation companies
2. Green/Net-zero energy buildings
3. Power utilities
4. Government agencies
5. Non-government agencies
6. Energy efficiency and environmental consulting companies
7. University and industry research organizations
8. International aid organizations

Objectives
The objectives of the Renewable Energy Systems Program are to:
1. Establish a firm understanding of the fundamentals of energy, based on the concepts of science and mathematics, such that graduates excel as professionals in the various fields of energy engineering.
2. Provide open-ended engineering problems, practical working examples and opportunities for applied senior projects via partnerships with industry and other institutions such that graduates become creative, independent leaders who are ready for immediate employment.
3. Convey the importance of becoming lifelong learners and responsible citizens who think critically, communicate effectively and are aware of professional and ethical responsibilities in implementing sustainable engineering solutions.
**Student Preparation**

High school students should be prepared to start their college academic work with at least college calculus and Freshman English composition. Typically, this means the successful new student has completed:

1. Four years of high school mathematics including algebra I and II, geometry and trigonometry
2. Four years of English composition/writing
3. Four years of science including physics and chemistry

Students entering the program by transfer are requested to contact the program director for evaluation of Renewable Energy related transfer courses.

**Accreditation**

Oregon Institute of Technology is accredited by the Northwest Commission on Colleges and Universities, 8060 165th Ave. NE, Suite 100, Redmond, WA 98052-3981, an institutional accrediting body recognized by the Council for Higher Education Accreditation and/or the Secretary of the U.S. Department of Education.

**Degree Requirements**

The Bachelor of Science in Renewable Energy Systems is a rigorous curriculum that requires 181 credit hours and approximately four years to complete. See the general education requirements for a bachelor's degree listed in the Academic Policies section of the catalog.

**Bachelor of Science in Renewable Energy Systems**

**Curriculum**

Required courses and recommended terms during which they should be taken:

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<thead>
<tr>
<th>Freshman Year</th>
<th>Fall</th>
<th>Winter</th>
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</thead>
<tbody>
<tr>
<td>CHE 202</td>
<td>General Chemistry</td>
<td>3</td>
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<tr>
<td>CHE 205</td>
<td>General Chemistry Laboratory</td>
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<tr>
<td>ENGR 266</td>
<td>Computer Programming for Engineers</td>
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<td>MATH 252</td>
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<tr>
<th>Freshman Year</th>
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<tbody>
<tr>
<td>CHE 260</td>
<td>Electrochemistry for Renewable Energy Applications</td>
</tr>
<tr>
<td>MATH 254N</td>
<td>Vector Calculus I</td>
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<td>REE 201*</td>
<td>Introduction to Renewable Energy</td>
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<td>WRI 227</td>
<td>Technical Report Writing</td>
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<tr>
<td>EE 221</td>
<td>Circuits I - DC and 1st Order Transient Analysis</td>
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<tr>
<td>PHY 221</td>
<td>General Physics with Calculus</td>
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<tr>
<td>MATH 321</td>
<td>Applied Differential Equations I Social Science elective</td>
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<td>EE 225</td>
<td>Circuits III - Laplace Transforms and Applications</td>
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<tr>
<td>PHY 222</td>
<td>General Physics with Calculus</td>
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<tr>
<td>REE 243</td>
<td>Electrical Power</td>
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<td>REE 253</td>
<td>Electromechanical Energy Conversion</td>
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<tbody>
<tr>
<td>REE 318</td>
<td>Fluid Mechanics I</td>
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<tr>
<td>MATH 361</td>
<td>Statistical Methods I</td>
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<td>WRI 327</td>
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<td>EE 321</td>
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<tr>
<td>MECH 318</td>
<td>Fluid Mechanics I</td>
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<tr>
<td>REE 331</td>
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<td>Statistical Methods I</td>
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<tr>
<td>WRI 327</td>
<td>Renewable Energy Engineering elective</td>
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<td>Power Electronics</td>
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<td>MECH 323</td>
<td>Renewable Energy Engineering elective</td>
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<tbody>
<tr>
<td>EE 343</td>
<td>Solid State Electronic Devices</td>
</tr>
<tr>
<td>REE 339</td>
<td>Senior Project I</td>
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<tr>
<td>REE 421</td>
<td>Energy Systems Design</td>
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<tr>
<td>REE 463</td>
<td>Energy Systems Instrumentation and Control</td>
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<table>
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<th>Junior Year</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 456</td>
<td>Control System Design</td>
<td>3</td>
</tr>
<tr>
<td>REE 412</td>
<td>Photovoltaic Systems</td>
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<tr>
<td>REE 449</td>
<td>Senior Project II</td>
<td>2</td>
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<td>SPE 321</td>
<td>Small Group and Team Communication</td>
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<table>
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<tr>
<th>Junior Year</th>
<th>Spring</th>
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<tbody>
<tr>
<td>REE 413</td>
<td>Electric Power Conversion Systems</td>
</tr>
<tr>
<td>REE 439</td>
<td>Energy Systems Management and Auditing</td>
</tr>
<tr>
<td>REE 455</td>
<td>Energy-Efficient Building Design</td>
</tr>
<tr>
<td>REE 459</td>
<td>Senior Project III</td>
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<td><strong>Total</strong></td>
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* Klamath Falls students may take EE 101/EE 102/EE 103 in place of REE 201.
** Adviser approval required

**Renewable Energy Engineering Electives**

(all courses may not be offered every year)

| REE 315/335 | Digital Logic Lecture/Lab |
| REE 344 | Nuclear Energy |
| REE 345 | Wind Power |
| REE 346 | Biofuels and Biomass |
| REE 347 | Hydroelectric Power |
| REE 348 | Solar Thermal Energy Systems |
| REE 451 | Geothermal Ground-Source and Thermal Heat Pumps |
| REE 465 | Renewable Energy Transportation Systems |
### Geomatics Department

J. Walker, Department Chair  
Office: Owens Hall, 116  
Professor: J. Walker  
Assistant Professors: E. Kalb, T. Kent, M. Marker  

### Degree Offered

Bachelor of Science in Geomatics with options in:  
Surveying  
Geographic Information Systems  

### Minor Offered

Geographic Information Systems  

Geomatics is the modern scientific term referring to an integrated approach to the measurement, analysis and management of spatial data. Geomatics employs advanced technologies such as Geographic Information Systems (GIS), the Global Positioning System (GPS), digital photogrammetry, digital total stations, and satellite remote sensing to create a detailed but understandable picture of the Earth’s physical features and the built environment. Geomatics encompasses disciplines that depend on georeferenced spatial data, including surveying, engineering, cartography, land information management, geodesy, and remote sensing.

Students within the Geomatics Program must choose between either an option in Surveying or Geographic Information Systems (GIS). Students may, with consent of their adviser, complete both options.

### Program Objectives

The bachelor in Geomatics Program options have the following objectives:  
1. Provide students with a broad foundation in major geomatics disciplines  
2. Prepare students to function effectively on multidisciplinary teams  
3. Prepare graduates to enter into professional practice  
4. Prepare graduates to become licensed or certified professionals

### Student Preparation

It is recommended that students prepare for entrance into the program by emphasizing mathematics and science in high school. Two years of algebra and one year each of geometry, trigonometry and physics are desirable prerequisites. Students lacking this preparation typically require additional time for degree completion.

### Degree Requirements

A minimum of 181 term hours must be completed for the Surveying option, of which 77 term hours must be in the GIS and geomatics area. A minimum of 181 term hours must be completed for the GIS option, of which 74 term hours must be in the GIS and geomatics area.

### Bachelor of Science in Geomatics, Surveying Option

The department offers a nationally-recognized professional degree program that prepares students for employment within the geomatics profession and licensure as a Professional Land Surveyor (PLS). Students enjoy small classes taught by licensed professionals that emphasize fundamental theory and problem solving in a computer-intensive curriculum. Field laboratory experiences integrated throughout the curriculum provide practical skills, and offer extensive opportunities to prepare students to work in teams using state-of-the art technology. Upon completing the freshman year, students often have sufficient experience to obtain summer employment as a survey crew member.

Completion of the program qualifies graduates to take the Fundamentals of Surveying (FS) exam during the spring term of the senior year. The broad-based nature of the curriculum ensures that graduates will be prepared to fulfill both the traditional and contemporary roles of the profession. The program rigor is similar to a traditional engineering program; however, geomatics courses replace the traditional engineering core subjects.

### Cooperative Education

Geomatics students may, upon completion of the freshman year, apply for student career experience programs (SCEP) with the U.S. Bureau of Land Management, Bonneville Power Administration, U.S. Forest Service, or other appropriate employers. Work experiences are paid and may be for three or six month periods. Students may earn two or four credits for work experience periods. A maximum of four credits may be applied toward the bachelor’s degree.

Geomatics students are also eligible for the Civil Engineering Cooperative Program (CECOP), offering high-quality, paid industrial experience and related academic activities while students pursue their degree. The Oregon State Board of Examiners for Engineering and Land Surveying (OS-BEELS) counts this internship time toward PLS licensure requirements.

### Scholarships

Students completing their freshman year and a summer internship with the Bureau of Land Management are eligible for scholarships varying from $1000 to $2000. SCEP students may apply for additional funding to cover books and tuition. Numerous other national and state scholarships are dedicated to geomatics students.

### Career Opportunities

The employment forecast for graduates in this field is exceptional. As an increasing number of licensed surveyors across the nation retire, a personnel shortage has been created within the geomatics profession. Graduates are prepared for a wide variety of career opportunities in the fields of surveying, engineering, construction, remote sensing, GIS, and land information management. Geomatics provides the opportunity to work primarily outdoors, exclusively in an office, or in some combination of the two. Geomatics attracts individuals who enjoy working outdoors, as well as those who enjoy working indoors with computers, advanced technology, and high-tech instruments.

### Accreditation

The Geomatics Program (surveying option) is accredited by the Applied Science Accreditation Commission (ASAC) of the Accreditation Board for Engineering and Technology (ABET), 111 Marketplace, Suite 1050, Baltimore, MD 21202-4012.
telephone: (410) 347-7700. ABET is a specialized accrediting board recognized by the Council for Higher Education and/or the Secretary of the U.S. Department of Education.

Bachelor of Science in Geomatics, Surveying Option

Curriculum

Required courses and recommended terms during which they should be taken:

Freshman Year Fall
GME 161 Plane Surveying I 4
MATH 112 Trigonometry 4
WRI 121 English Composition 3
Total 14

Freshman Year Winter
CIV112 Graphical Communication Techniques in Civil Engineering 3
GME 175 Computations and Platting 4
MATH 251 Differential Calculus 4
WRI 122 English Composition 3
Total 14

Sophomore Year Fall
GME 162 Plane Surveying II 5
MATH 252 Integral Calculus 4
SPE 111 Fundamentals of Speech 3
Total 16

Sophomore Year Winter
GME 242 Land Descriptions and Cadastre 3
GME 264 Digital Design for Surveying 3
PHY 222 General Physics with Calculus* 4
WRI 227 Technical Report Writing 3
Total 16

Sophomore Year Spring
GME 372 Subdivision Planning and Platting 4
MATH 361 Statistical Methods I 4
MIS 113 Introduction to Relational Databases 3
PHY 223 General Physics with Calculus* 4
Total 15

Junior Year Fall
GME 343 Boundary Surveys 4
MIS 115 Visual BASIC Programming 4
WRI 327 Advanced Technical Writing 3
Total 15

Junior Year Winter
GME 466 Boundary Law II 3
SPE 321 Small Group and Team Communication 3
GME/GIS elective 3
Social Science elective 3
Total 16

Junior Year Spring
BUS 355 Business Law 3
GME 351 Construction and Engineering Surveying 4
GME 444 Adjustment by Least Squares 4
IMGT 345 Engineering Economy 3
Total 17

Senior Year Fall
GME 425 Remote Sensing 4
GME 451 Geodesy 4
Humanities elective 3
Social Science elective 3
Total 14

Senior Year Winter
GME 434 Advanced Geographic Information Systems 4
GME 452 Map Projections 3
GME 454 GPS Applications 4
Science elective 4
Total 15

Senior Year Spring
CIV 221 Engineering Geology 3
GME 468 Geomatics Practicum 4
BUS 304 or BUS 445 recommended 3
Total 13

* General Physics PHY 201, PHY202, and PHY 203 are allowable but not recommended
** Students must demonstrate advancement in educational content, courses must not be lower level than courses in the required curriculum. MATH 261 or MATH 362 recommended.
*** BUS 304 or BUS 445 recommended
Note: Humanities and Social Science electives must be approved by the department.

Career Opportunities

The list of opportunities for students in the field of GIS has been, and is continuing to show substantial growth. As our society becomes more data centered, the importance of understanding the spatial location of this data and its spatial relationship to other data is becoming increasingly apparent. Understanding such geospatial relationships is fundamental to areas such as health care, land records management, transportation modeling, environmental engineering/science, and urban planning, to name only a few. Local, state, and federal agencies are embracing GIS more each year as these agencies realize that GIS is the appropriate tool to solve long-standing geospatial problems. Private industry is also embracing GIS since it can be used to streamline delivery and/or response routes. Both private and public entities have also realized that GIS provides an excellent decision support framework structure.

Bachelor of Science in Geomatics, Geographic Information Systems (GIS) Option

Geographic Information Systems (GIS) is a systematic approach to the management, analysis, and display of geographic information. Although the management of such information often times requires the application of advanced RDBMS techniques, the ability to see a project through to completion requires fundamental project management skills as well. The analysis of geodatasets is predicated on a firm understanding of spatial reference/coordinate systems, topological relationships, and statistical methods. Techniques for displaying geographic information take various forms such as maps, geographic databases, and data models. Students graduating from this course of study will understand how to manipulate geographically based data in order to solve geospatial problems.

Students learn in a project-based environment how to manage the flow of data through the project in terms of data acquisition, processing, analysis, and presentation. Within the GIS option, students are able to select individual areas of focus based on independent study and/or online courses.
## Bachelor of Science in Geomatics, Geographic Information Systems (GIS) Option

### Curriculum

Required courses and recommended terms during which they should be taken:

#### Freshman Year

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<tr>
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<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Fall</td>
<td>GIS 103</td>
<td>Introduction to GIS</td>
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<tr>
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<td>GME 161</td>
<td>Plane Surveying I</td>
<td>4</td>
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<tr>
<td></td>
<td>MATH 111</td>
<td>College Algebra</td>
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<td>WRI 121</td>
<td>English Composition</td>
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<th>Term</th>
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<th>Course Name</th>
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<tr>
<td>Winter</td>
<td>CIV 112</td>
<td>Graphical Communication Techniques in Civil Engineering</td>
<td>3</td>
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<tr>
<td></td>
<td>GIS 105</td>
<td>Map and Compass/GPS</td>
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<tr>
<td></td>
<td>GME 175</td>
<td>Computations and Plotting</td>
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<tr>
<td></td>
<td>MAT 112</td>
<td>Trigonometry</td>
<td>4</td>
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<tr>
<td></td>
<td>WRI 122</td>
<td>English Composition</td>
<td>3</td>
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<td>GIS 306</td>
<td>Geospatial Raster Analysis II</td>
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<td>GME 134</td>
<td>Geographic Information Systems</td>
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<td></td>
<td>MATH 251</td>
<td>Integral Calculus</td>
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<td>SPE 111</td>
<td>Fundamentals of Speech</td>
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<td>GME 425</td>
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#### Sophomore Year

<table>
<thead>
<tr>
<th>Term</th>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>GIS 306</td>
<td>Geospatial Raster Analysis II</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>GME 241</td>
<td>Boundary Law I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MATH 252</td>
<td>Integral Calculus</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>PHY 221</td>
<td>General Physics with Calculus</td>
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</tr>
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<th>Term</th>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>GME 425</td>
<td>Remote Sensing</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>GME 452</td>
<td>Map Projections</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>GME 454</td>
<td>GPS Applications</td>
<td>4</td>
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</thead>
<tbody>
<tr>
<td>Spring</td>
<td>CIV 221</td>
<td>Engineering Geology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>GME 468</td>
<td>Geomatics Practicum</td>
<td>4</td>
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#### Junior Year

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<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>Fall</td>
<td>GIS 446</td>
<td>GIS Database Development</td>
<td>4</td>
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<tr>
<td></td>
<td>MIS 115</td>
<td>Visual BASIC Programming</td>
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<tr>
<td></td>
<td>WRI 227</td>
<td>Technical Report Writing</td>
<td>3</td>
</tr>
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<td><strong>Total</strong></td>
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<thead>
<tr>
<th>Term</th>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Winter</td>
<td>GIS 205</td>
<td>GIS Data Integration</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>GIS 332</td>
<td>Customizing the GIS Environment I</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>SPE 321</td>
<td>Small Group and Team Communication</td>
<td>3</td>
</tr>
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<tbody>
<tr>
<td>Spring</td>
<td>BUS 355</td>
<td>Business Law</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>GIS 432</td>
<td>Customizing the GIS Environment II</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>IMGT 345</td>
<td>Engineering Economy</td>
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<tbody>
<tr>
<td>Winter</td>
<td>GIS 456</td>
<td>GIS Management</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>GIS 452</td>
<td>Map Projections</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>GIS 454</td>
<td>GPS Applications</td>
<td>4</td>
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<td>CIV 221</td>
<td>Engineering Geology</td>
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<td></td>
<td>GME 468</td>
<td>Geomatics Practicum</td>
<td>4</td>
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<td><strong>Total</strong></td>
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#### Senior Year

<table>
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<tr>
<th>Term</th>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Fall</td>
<td>GME 425</td>
<td>Remote Sensing</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>GME 451</td>
<td>Geodesy</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>WRI 327</td>
<td>Advanced Technical Writing</td>
<td>3</td>
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<td></td>
<td><strong>Total</strong></td>
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<th>Credits</th>
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<tbody>
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<td>Winter</td>
<td>GIS 456</td>
<td>GIS Management</td>
<td>3</td>
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<td></td>
<td>GIS 452</td>
<td>Map Projections</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>GIS 454</td>
<td>GPS Applications</td>
<td>4</td>
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<td></td>
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<td><strong>Total</strong></td>
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</table>

### Geographic Information Systems Minor

The Geographic Information Systems (GIS) minor is open to all majors and is especially recommended for students majoring in Geomatics (Surveying Option), Environmental Sciences, Business/Management/Information Systems, Computer Software Engineering, Renewable Energy Systems and Health Care. The minor provides the essential kernel of knowledge and skill necessary to approach geospatial issues pertaining to these disciplines. An adviser in the Geomatics Program must approve any substitution of courses from those listed.

Preparation for this course of study entails a functional level of computer literacy that can be evaluated in consultation with an adviser. Students must also have successfully completed MATH 111 prior to enrolling in upper-division classes.

The Minor in Geographic Information Systems (GIS) acknowledges the achievement of 21 credits taken from the following GIS course listing.

### Requirements of Minor

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GIS 103</td>
<td>Introduction to GIS</td>
<td>1</td>
</tr>
<tr>
<td>GME 134</td>
<td>Geographic Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>GIS 306</td>
<td>Geospatial Raster Analysis II</td>
<td>4</td>
</tr>
<tr>
<td>GIS 316</td>
<td>Geospatial Vector Analysis I</td>
<td>4</td>
</tr>
<tr>
<td>GIS 326</td>
<td>Geospatial Vector Analysis II</td>
<td>4</td>
</tr>
<tr>
<td>GIS 332</td>
<td>Customizing the GIS Environment I</td>
<td>4</td>
</tr>
<tr>
<td>GIS 407</td>
<td>GIS Practicum</td>
<td>4</td>
</tr>
<tr>
<td>GIS 432</td>
<td>Customizing the GIS Environment II</td>
<td>4</td>
</tr>
<tr>
<td>GIS 446</td>
<td>GIS Database Development</td>
<td>4</td>
</tr>
</tbody>
</table>

### Elective Courses: 16 credits required

- GIS 306 Geospatial Raster Analysis II
- GIS 316 Geospatial Vector Analysis I
- GIS 326 Geospatial Vector Analysis II
- GIS 332 Customizing the GIS Environment I
- GIS 407 GIS Practicum
- GIS 432 Customizing the GIS Environment II
- GIS 446 GIS Database Development

Note: Humanities and Social Science electives must be approved by the department.
**Humanities and Social Sciences Department**

Lynda Baker, Department Chair  
Office: Learning Resources Center, 222

Maria Lynn Kessler, Program Director and Curriculum Coordinator, Applied Psychology

Richard Pohl, Extern Coordinator, Applied Psychology

Lynda Baker, Curriculum Coordinator, Humanities

Mark Clark, Curriculum Coordinator, Social Sciences

Professors: L. Baker, M. Clark, R. Luppi, R. Pohl

Associate Professor: M. Kessler, M. Neupert

Assistant Professors: L. Dubray, A. Huntoon

**Degrees Offered**

Bachelor of Science in Applied Psychology

**Minors Offered**

International Relations Minor  
Psychology Minor

**Module Offered**

Oregon Transfer (OTM)

The Humanities and Social Sciences Department offers a wide variety of classes that meet the general education requirements for all students. In addition, these classes meet the lower-division requirements for college transfer students in many pre-professional programs.

**Department Goals and Objectives**

1. To provide coursework in the humanities and social sciences in order to prepare students for employment in a rapidly changing global market.

2. To provide course offerings in multiculturalism and globalization.

3. To assist students in developing critical thinking and problem-solving abilities and to develop scientific knowledge and inquiry skills.

4. To assist students in developing ethical and cultural awareness.

5. To prepare students to be responsible citizens and lifelong learners.

6. To assist students in developing an aesthetic appreciation of the arts.

**International Relations Minor**

The International Relations Minor provides an interdisciplinary grounding in the political, economic, and cultural factors that influence human activities across national boundaries in today's changing global environment. The minor offers integrated courses in social science, humanities, business, and communications.

This OIT offering is based upon certain academic studies and employer recommendations for the basic preparation of students seeking careers with multinational corporations, banking, the U.S. government, international organizations, and the media. The minor prepares students, both technical and non-technical, for positions that require a basic understanding of international politics and business, intercultural communication, and global cultural diversity.

Enrollment in the minor is through the Humanities and Social Sciences Department. For more information, contact the department chair or your adviser.

**Requirements of the Minor**

1. A minimum of 24 credits is required to earn the minor.

2. A minimum of 12 credits must be selected from upper-division coursework. Students must pay strict attention to prerequisite requirements.

3. Recommended tracks for specific majors:
   - a. Health Sciences (including programs in Medical Imaging, Dental Hygiene, and Natural Sciences)
     Four courses from PSY 201, PSY 202, PSY 203, PSY 215, PSY 216
     Two courses from PSY 311, PSY 312, PSY 330, PSY 331  
     Required courses: PSY 336 and PSY 337
   - b. Management
     Four courses from PSY 201, PSY 202, PSY 203, PSY 215, PSY 216
     Two courses from PSY 330, PSY 331, PSY 321, PSY 322  
     Required courses: PSY 337 and PSY 410
   - c. Communication Studies
     Four courses from PSY 201, PSY 202, PSY 203, PSY 215, PSY 216
     Two courses from PSY 311, PSY 312, PSY 330, PSY 331, PSY 332
   - d. Engineering Technologies
     Four courses from PSY 201, PSY 202, PSY 203, PSY 215, PSY 216
     Two courses from PSY 321, PSY 322, PSY 330, PSY 331, PSY 336, PSY 337
     Required courses: PSY 347 and PSY 410

All courses must be completed with grade “C” or better.

**Psychology Minor**

The psychology minor is open to all majors and is especially recommended for students majoring in allied health and medical sciences, management, and communication studies. The minor offers specialized courses in psychology that can enhance knowledge. A minimum of 24 credits is required to complete the minor. Students (and advisers) should follow the recommended tracks for their major, or the general track. An adviser in the Applied Psychology Program must approve any substitution of elective courses for those listed.

Enrollment in the minor is through the Humanities and Social Sciences Department; contact the department chair or your adviser for more information.

**Requirements of the Minor**

1. A minimum of 24 credits is required to earn the minor.

2. A minimum of 12 credits must be selected from upper-division coursework. Students must pay strict attention to prerequisite requirements.

3. Recommended tracks for specific majors:
   - a. Health Sciences (including programs in Medical Imaging, Dental Hygiene, and Natural Sciences)
     Four courses from PSY 201, PSY 202, PSY 203, PSY 215, PSY 216
     Two courses from PSY 311, PSY 312, PSY 330, PSY 331  
     Required courses: PSY 336 and PSY 337
   - b. Management
     Four courses from PSY 201, PSY 202, PSY 203, PSY 215, PSY 216
     Two courses from PSY 330, PSY 331, PSY 321, PSY 322  
     Required courses: PSY 337 and PSY 410
   - c. Communication Studies
     Four courses from PSY 201, PSY 202, PSY 203, PSY 215, PSY 216
     Two courses from PSY 330, PSY 331, PSY 321, PSY 322
   - d. Engineering Technologies
     Four courses from PSY 201, PSY 202, PSY 203, PSY 215, PSY 216
     Two courses from PSY 321, PSY 322, PSY 330, PSY 331, PSY 336, PSY 337
     Required courses: PSY 347 and PSY 410

All courses must be completed with grade “C” or better.

**Courses Offered**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 381</td>
<td>Contemporary World Literature</td>
<td>Humanities</td>
</tr>
<tr>
<td>HIST 392</td>
<td>Modern Asia</td>
<td>Humanities</td>
</tr>
<tr>
<td>PSCI 497</td>
<td>United States Foreign Policy</td>
<td>Humanities</td>
</tr>
</tbody>
</table>

*All courses must be completed with grade “C” or better.*
e. General
Four courses from PSY 201, PSY 202, PSY 203, PSY 215, PSY 216
Four courses from PSY 311, PSY 312, PSY 321, PSY 322, PSY 330, PSY 331, PSY 336, PSY 337, PSY 347, PSY 410
4. For all courses counted toward the Minor in Psychology, a letter grade of “C” or better is required to be awarded the minor.
5. At least 12 credits of courses in this minor must be completed at OIT.

Note: Not all courses are offered every term or every year.

Applied Psychology

Maria Lynn Kessler, Program Director
Office: LRC 219A
Richard Pohl, Externship Coordinator
Office: Purvine, 290

Participating Faculty: A. Huuntoo, M.L. Kessler, R. Pohl

Degree Offered
Bachelor of Science in Applied Psychology

The Bachelor of Science in Applied Psychology prepares students for careers that apply the principles of psychology in a variety of diverse settings. Three emphasis areas are provided. The human services emphasis focuses on preparing students for working with human service agencies and with mandated clients (e.g., criminal substance abusers, behavioral monitoring and rehabilitation of repeat offenders, problems dealing with issues of domestic violence and children at risk). An emphasis on psychology applied to business (organizational development) focuses on issues relative to management within organizations, management of organizational change and organizational development. The third emphasis area is pre-education. Students in this emphasis are prepared, through the careful selection of courses, to enter graduate programs in education. They may choose to focus on elementary, special, school counseling or secondary education with an emphasis in social sciences. Students should consult with their adviser about their interests. Students in the program share a common experience in courses offered the first two years. Then they branch out into courses tailored to the emphasis they wish to pursue. Through the use of seminars, externships and senior projects, students may prepare themselves for exciting and rewarding careers in the applied psychology field, or for additional coursework in graduate programs.

Mission Statement
The mission of the Applied Psychology Program is to enable students to apply general knowledge of psychology and in-depth knowledge and skill in specific areas of psychology to communicate effectively, think critically, behave ethically and with cultural awareness and work interpersonally with people from a wide variety of backgrounds.

Objectives
Objectives of the Applied Psychology Program are:
1. To produce graduates with effective interpersonal skills that can work in a variety of practical settings.
2. To enable students to obtain the knowledge and skills necessary for immediate employment and/or graduate study in psychology and related areas.
3. To provide opportunities for students who wish to apply psychology training to employment in business and human service related organizations or to prepare for graduate programs in related areas.
4. To serve as a minor to complement other programs on campus.

Outcomes
• Students will be able to demonstrate an understanding of the major theoretical approaches, findings and trends in psychology
• Students will demonstrate an understanding of and be able to use major research methodologies in psychology, including design, data analysis and interpretation
• Students will demonstrate an understanding of applications of psychology to personal, social and organizational problems and issues

Career Opportunities
Nationwide, college graduates with a bachelor’s in psychology perform a wide variety of jobs or attend a wide variety of graduate programs. Graduates eventually work in counseling, education, social service, management, public relations, personnel, sales, and other fields. All of these jobs are potentially available to graduates of OIT’s Applied Psychology Program. Many of OIT’s applied psychology graduates have found jobs in the Klamath Basin. About two-thirds work in human services. Human service employers include county and state agencies, as well as a wide range of private, non-profit agencies. Human service graduates benefit from the unique focus of OIT’s Applied Psychology Program with its emphasis on hands-on applied training. Other graduates complete the Master of Arts in Teaching (MAT) Program and pursue careers in education. Most pursue teaching in the K-6th grades, but some have pursued careers in school counseling, special education, or secondary teaching. Graduates have also been employed in industry and are following management training programs. Finally, graduates have also pursued various master’s and doctoral programs in psychology (e.g., counseling, management, organization development, behavior analysis and human services) and related fields (e.g., chiropractic and social work).

Degree Requirements
Students must meet the general education requirements, as stated elsewhere in this catalog, and satisfactorily complete the courses listed in this curriculum to obtain the Bachelor of Science in Applied Psychology. A total of 181 credits are required for the degree. Students must complete a core program consisting of 33 credits. These core courses are PSY 201, PSY 202, PSY 203, PSY 215, PSY 216, PSY 301, PSY 313, PSY 330, PSY 331, and MATH 243 or MATH 361. In addition, students must complete an emphasis area (listed below). Credits taken for externship or senior project do not count toward the emphasis. Students electing to take externship are restricted to a maximum of 32 credits. All core and emphasis courses must be completed with a minimum grade of “C” in order to earn the degree.
### Emphasis Requirements

Students completing the Human Services emphasis must complete the following courses:
- PSY 220 – Community Psychology
- PSY 334 – Behavior Modification I
- PSY 335 – Behavior Modification II
- PSY 339 – Biopsychology
- PSY 341 – Psychoactive Drugs I: Psychiatric Drugs
- PSY 342 – Psychoactive Drugs II: Abused Drugs

Plus four credits of psychology or sociology electives by advisement.

Students completing the Organizational Development track must complete the following courses:
- PSY 347 – Organizational Behavior
- PSY 360 – Organizational Psychology
- PSY 361 – Industrial Psychology
- PSY 410 – Organizational Change and Development

Plus twelve credits of psychology, business, or technology electives by advisement.

Students completing the Pre-Education track must complete the following courses:
- PSY 311 – Human Growth and Development I
- PSY 312 – Human Growth and Development II
- PSY 335 – Behavior Modification I
- PSY 416 – Abnormal Behavior of Children and Adolescents

Plus seven credits of psychology electives by advisement.

Students in the Pre-Education track must consult closely with their adviser in the selection of elective courses to complete prerequisite courses for their desired endorsement area.

### Bachelor of Science in Applied Psychology

#### Curriculum

Required courses and recommended terms during which they should be taken:

**Freshman Year Fall**
- WRI 121 – English Composition
- Humanities elective
  - Electives
  - **Total** 15

**Freshman Year Winter**
- MATH 105 or MATH 111 – College Algebra
- PSY 202 – Psychology
- WRI 122 – English Composition
- Humanities elective
  - Elective
  - **Total** 16

**Freshman Year Spring**
- PSY 203 – Psychology
- SPE 111 – Fundamentals of Speech
- Communication elective*
  - Humanities elective
  - Social Science elective
  - **Total** 15

**Sophomore Year Fall**
- PSY 215 – Abnormal Psychology I
- SPE 321 – Small Group and Team Communication
- Humanities or elective
  - Laboratory Science elective
  - Social Science elective
  - **Total** 16

**Sophomore Year Winter**
- PSY 216 – Abnormal Psychology II
- Humans or electives
  - Laboratory Science elective
  - Social Science elective
  - **Total** 16

**Sophomore Year Spring**
- MATH 243 or MATH 361 – Statistical Methods I
- Psychological Research Methods I
  - Emphasis elective**
  - Laboratory Science elective
  - Social Science elective
  - **Total** 14

**Junior Year Fall**
- PSY 301 – Basic Counseling Techniques
- PSY 313 – Psychological Research Methods I
  - Communication elective*
  - Emphasis elective**
  - **Total** 14

**Junior Year Winter**
- PSY 330 – Social Psychology I
  - Emphasis electives**
  - Elective
  - **Total** 15

**Junior Year Spring**
- PSY 331 – Social Psychology II
  - Emphasis electives**
  - Elective
  - **Total** 15

**Senior Year Fall**
- Externship*** or electives*
  - **Total** 15

**Senior Year Winter**
- Externship*** or electives*
  - **Total** 15

* See adviser for appropriate courses.
** To complete their emphasis, students must take courses from the appropriate list that follows. Credits taken for externship or senior project do not count as emphasis electives.
*** No more than 32 credits of externship allowed for graduation without departmental approval.

#### Emphasis Electives

**Human services emphasis:** PSY 220, PSY 334, PSY 335, PSY 339, PSY 341, PSY 342, plus four credits of psychology or sociology electives by advisement.

**Organization development emphasis:** PSY 347, PSY 360, PSY 361, PSY 410, plus twelve credits of psychology, business, or technology electives by advisement.

**Pre-Education emphasis:** PSY 311, PSY 312, PSY 334, PSY 335, PSY 416, plus seven credits of psychology electives by advisement.

#### Oregon Transfer Module (OTM)

The Oregon Transfer Module (OTM) provides a one-year curriculum for students who plan to transfer to a State of Oregon community college or university. The module allows students to complete one year of general education foundation course work that is academically sound and will meet the admission standards of the receiving school. Students should work closely with an academic adviser to ensure selection of appropriate course work. Upon transfer, students may be required to complete additional course work in general education or an academic major specific to the receiving institution. Students who transfer prior to the completion of the Oregon Transfer Module will have their courses individually evaluated by the receiving institution. Students must complete a minimum of 45 credits of lower division course work with a grade of “C-” or better in order to receive credit for the Oregon Transfer Module. A minimum of 12 credits must be earned at OIT. The following courses may be used to complete the Oregon Transfer Module:
FOUNDATIONAL SKILLS
Writing and Oral Communication
Writing
Two courses of college level composition
WRI 121  English Composition (3)
WRI 122  English Composition (3)
WRI 123  English Composition (3)
WRI 227  Technical Report Writing (3)

Oral Communication
One course of Fundamentals of Speech or communication
SPE 111 Fundamentals of Speech (3)

Mathematics
One course of College level Math
MATH 105  Collegiate Mathematics (4)
MATH 111  College Algebra (4)
MATH 111A/111B  College Algebra (4)
MATH 112  Trigonometry (4)
MATH 211  Fundamentals of Elementary Mathematics I (4)
MATH 212  Fundamentals of Elementary Mathematics II (4)
MATH 213  Fundamentals of Elementary Mathematics III (4)
MATH 243  Introductory Statistics (4)
MATH 251  Differential Calculus (4)
MATH 252  Integral Calculus (4)
MATH 253N Sequences and Series (4)
MATH 254N Vector Calculus I (4)
MATH 261  Introduction to Linear Algebra (3)

INTRODUCTION TO DISCIPLINES
Arts and Letters/Humanities
3 courses of Arts and letters/Humanities
OIT only allows 3 credits of performance or studio-based courses in this category
ART courses
COM 205  Intercultural Communication
COM 320  Advanced Intercultural Communication
ENG 104/105/106  Introduction to Literature Seminar
ENG 207  Twentieth Century Novel: Nobel Prize Winners
ENG 211  Twentieth Century Drama
ENG 235  American Multicultural Literature
ENG 246  Reading for Fiction Writers
ENG 253  American Literature I
ENG 254  American Literature II
ENG 255  American Literature III
ENG 266  Native American Literature and Film
ENG 367  Art and Trash in Contemporary Fiction
ENG 373  British Culture and Literature: Romanticism to the Present
ENG 381  Contemporary World Literature
ENG 387  Children's Literature for Teachers
HUM 125  Introduction to Technology, Society and Values
HUM 147  Introduction to Humanities I
HUM 148  Introduction to Humanities II
HUM 149  Introduction to Humanities III
HUM 207/307/407 Seminar
HUM 225  Contemporary Theater: Ashland Plays
HUM 366  Engineering, Business and the Holocaust
PHIL 331  Ethics: Moral Issues in the Professions
MUS 197  Chorus
MUS 207  Symphony I, II, III

Science/Math/Computer Science
3 courses, including at least one biological or physical science with a laboratory
BIO 101  General Biology
BIO 102  General Biology
BIO 103  General Biology
BIO 105  Microbiology
BIO 111  Introduction to Environmental Sciences
BIO 112  Introduction to Data Analysis
BIO 211  Principles of Biology
BIO 212  Principles of Biology
BIO 213  Principles of Biology
BIO 216  Introduction to Veterinary Medicine
BIO 220  Cardiovascular Physiology
BIO 225  Riparian Assessment Methods
BIO 226  Introduction to Wildlife Rehabilitation
BIO 231  Human Anatomy and Physiology I
BIO 232  Human Anatomy and Physiology II
BIO 233  Human Anatomy and Physiology III
BIO 313  Botany
BIO 325  Applied Aquatic Botany
BIO 327  General Ecology
BIO 331  Human Anatomy and Physiology I
BIO 332  Human Anatomy and Physiology II
BIO 333  Human Anatomy and Physiology III
BIO 335  Cross Sectional Anatomy
BIO 337  Aquatic Ecology
BIO 345  Medical Microbiology
BIO 346  Pathophysiology I
BIO 347  Pathophysiology II
BIO 426  Evolutionary Biology
BIO 428  Animal Behavior
BIO 434  Data Analysis Methods
BIO 436  Immunology
BIO 485  Klamath Bioregional Studies
CHE 101  Elementary Chemistry
CHE 102  Elementary Chemistry
CHE 103  Elementary Chemistry
CHE 104  Elementary Chemistry Laboratory
CHE 105  Elementary Chemistry Laboratory
CHE 106  Elementary Chemistry Laboratory
CHE 201  General Chemistry
CHE 202  General Chemistry
CHE 203  General Chemistry
CHE 204  General Chemistry Laboratory
CHE 205  General Chemistry Laboratory
CHE 206  General Chemistry Laboratory
CHE 210  Clinical Pharmacology
CHE 221  General Chemistry
CHE 222  General Chemistry
CHE 223  General Chemistry
CHE 231  Streamwater Chemistry
CHE 232  Streamwater Sampling
CHE 260  Electrochemistry for Renewable Energy Applications
CHE 315  Environmental Chemistry and Toxicology
CHE 325  Soil Science
CHE 331  Organic Chemistry I
CHE 332  Organic Chemistry II
CHE 333  Organic Chemistry III
CHE 341  Instrumental Methods/ Data Acquisition I
CHE 345  Corrosion Chemistry
CHE 346  Corrosion Chemistry Laboratory
CHE 450  Biochemistry I
CHE 451  Biochemistry II
CHE 452  Biochemistry III
CHE 455  Water Quality Technology
CHE 465  Fate and Transport of Pollutants
CST 101  Introduction to Personal Computing
GEOG 105  Physical Geography: Geomorphology
GEOG 115  Physical Geography: Climatology
MATH 105  Collegiate Mathematics
MATH 111  College Algebra
MATH 111A/MATH111B  College Algebra
MATH 112  Trigonometry
MATH 211  Fundamentals of Elementary Mathematics I
MATH 212  Fundamentals of Elementary Mathematics II
MATH 213  Fundamentals of Elementary Mathematics III
MATH 243  Introductory Statistics (4)
MATH 251  Differential Calculus (4)
MATH 252  Integral Calculus (4)
MATH 253N Sequences and Series (4)
MATH 254N Vector Calculus I (4)
MATH 261  Introduction to Linear Algebra (3)

Oregon Institute of Technology
**Social Science**

Three courses of Social Science

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<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>ANTH 101</td>
<td>Introduction to Physical Anthropology</td>
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<td>ANTH 102</td>
<td>Introduction to Archeology</td>
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<td>Introduction to Cultural Anthropology</td>
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<td>ANTH 207</td>
<td>Seminar</td>
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<td>ANTH 335</td>
<td>The Built Environment</td>
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<td>ANTH 452</td>
<td>Globalization</td>
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<td>ECO 201N</td>
<td>Principles of Economics, Microeconomics</td>
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<td>ECO 202N</td>
<td>Principles of Economics, Macroeconomics</td>
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<tr>
<td>ECO 203</td>
<td>Principles of Economics, Special Topics</td>
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<td>ECO 367</td>
<td>International Economics and Finance</td>
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<td>GEOG 106</td>
<td>Cultural Geography I</td>
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<td>GEOG 107</td>
<td>Cultural Geography II</td>
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<td>GEOG 108</td>
<td>Cultural Geography III</td>
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<td>HIST 101/HIST 102/HIST 103</td>
<td>History of Western Civilization</td>
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<td>HIST 201/HIST 202/HIST 203</td>
<td>U.S. History</td>
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<tr>
<td>HIST 207, HIST 307, HIST 407</td>
<td>Seminar</td>
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<td>HIST 215</td>
<td>The American Western Experience</td>
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<td>HIST 216</td>
<td>American Military History</td>
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<td>HIST 224</td>
<td>Technology and the Ancient World</td>
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<td>HIST 225</td>
<td>The Industrial Revolution</td>
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<td>HIST 226</td>
<td>Technology and the Modern World</td>
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<td>HIST 335</td>
<td>The Engineering Profession</td>
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<td>HIST 392</td>
<td>Modern Asia</td>
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<td>PSCI 201</td>
<td>United States Government</td>
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<td>PSCI 250</td>
<td>Introduction to World Politics</td>
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<td>PSCI 326</td>
<td>World Politics in Transition</td>
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<td>PSCI 355</td>
<td>International Conflict in the 20th Century</td>
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<td>PSCI 497</td>
<td>United States Foreign Policy</td>
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<td>PSY 110</td>
<td>Human Services Careers</td>
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<td>PSY 201</td>
<td>Psychology</td>
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**Other Courses**

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<td>Psychology</td>
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<td>Abnormal Psychology I</td>
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<td>PSY 216</td>
<td>Abnormal Psychology II</td>
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<tr>
<td>PSY 220</td>
<td>Community Psychology</td>
</tr>
<tr>
<td>PSY 301</td>
<td>Basic Counseling Techniques</td>
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<tr>
<td>PSY 311</td>
<td>Human Growth and Development I</td>
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<tr>
<td>PSY 312</td>
<td>Human Growth and Development II</td>
</tr>
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<td>PSY 313</td>
<td>Psychological Research Methods I</td>
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<tr>
<td>PSY 314</td>
<td>Psychological Research Methods II</td>
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<td>PSY 317</td>
<td>Field Placement Seminar</td>
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<td>PSY 321/PSY 322</td>
<td>Theories of Personality</td>
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<td>PSY 325 Stress Management</td>
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<td>PSY 334 Behavior Modification I</td>
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<td>PSY 338 Biopsychology</td>
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<td>Psychiatric Drugs</td>
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<td>PSY 342 Psychoactive Drugs II: Abused Drugs</td>
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<td>PSY 347 Organizational Behavior</td>
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<td>PSY 351 Cognitive Restructuring I</td>
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<td>PSY 364 Environmental Psychology</td>
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<td>PSY 374 Therapeutic Communities</td>
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<td>PSY 401 Advanced Counseling Techniques</td>
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<td>PSY 402 Applied Psychology Methods II</td>
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<td>PSY 403 Applied Psychology Methods III</td>
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<td>PSY 410 Organizational Change and Development</td>
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<td>PSY 416 Abnormal Behavior of Children and Adolescents</td>
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<td>PSY 420 Applied Psychology Externship</td>
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<td>PSY 428 Animal Behavior</td>
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<td>PSY 446 Psychological Trauma</td>
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<td>PSY 456 Performance Management</td>
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<td>PSY 464 Organizational Structure</td>
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<td>SOC 204 Introduction to Sociology</td>
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<td>SOC 210 Marriage and Family Living</td>
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<td></td>
<td>SOC 304 Criminology</td>
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</tbody>
</table>
Department of Management

Hallie Neupert, Interim Department Chair
Office: Owens Hall, 139

Richard Bailey, Curriculum Coordinator, Accounting
Dave Geigle, Curriculum Coordinator, Information Technology
Charlie Jones, Curriculum Coordinator, Operations Management
Grant Kirby, Program Director, Information Technology (Portland)
Marla Miller, Curriculum Coordinator, Entrepreneurship/Small Business Management
Jane Perri, Curriculum Coordinator, Marketing

Professors: R. Bailey, M. Huntley, C. Jones, M. Sevigny
Associate Professors: D. Geigle, M. Ivey, M. Miller, C. Morgan, H. Neupert, J. Wolverton

Assistant Professors: G. Kirby, J. Perri

Degrees Offered
Bachelor of Science in Allied Health Management
Bachelor of Science in Information Technology, with options in:
  - Accounting
  - Applications Development
  - Business/Systems Analysis
  - Health Informatics
Bachelor of Science in Management, with options in:
  - Accounting
  - Entrepreneurship/Small Business Management
  - Marketing
Bachelor of Science in Operations Management

Minors Offered
Business
International Business
Information Technology

Specializations Offered
Accounting
Entrepreneurship/Small Business Management
Marketing

Certificate Offered
Accounting (post baccalaureate)

The Department of Management prepares students to take their place as leaders and managers in contemporary public and private organizations. Faculty in this department have been selected for their managerial experience and expertise in a diverse array of production and service industries.

As a result of this unique combination of resources, the Management Degree Programs remain vital and up-to-date, providing students with the technical tools of management and interpersonal skills that employers most desire. Equally important, each graduate will be ready to perform as an effective citizen in a culturally diverse, global work place.

Degree Completion and Co-enrollment at Community Colleges
The Management Department has worked with many Oregon community colleges to develop Joint Enrollment, Transfer Credit (Articulation) Agreements and course sequences so that students can complete a degree with coursework taken from multiple institutions. See the general education requirements section of this catalog, the OIT Registrar’s Web site, or a management adviser for additional information. Coursework is delivered in a traditional classroom/computer lab setting at the Klamath Falls and Portland campuses. A capstone Senior Project provides management students with an opportunity to integrate their educational experience in the context of a “real world” business problem or project.

Distance Education
Many of the core management courses are available online to facilitate the needs of degree-completion students. Web courses are particularly appropriate for students capable of self-directed educational activities.

The Information Technology Applications Development Option is available online.

Required Student Equipment
Successful completion of these degrees requires intensive, hands-on use of computers. Therefore, all students are required to own their own computer. To ensure compatibility with campus-wide computers and networks, students should consult a department faculty member for a specification sheet. Financial aid may be available to help defray the cost of this equipment. Please consult the Financial Aid Office at OIT.

Allied Health Management

This program bridges two different disciplines and departments: Allied Health Partnerships and Management. The Bachelor of Science in Allied Health Management offers Emphasis in allied health majors. An emphasis must be in an area that requires a national registry, licensure or certification.

After the student has successfully completed the registry exam in their chosen allied health field, s/he may complete management courses and an associate degree. Students may choose to take the courses offered through the Distance Education Program or the traditional style in the classroom. Students who fulfill the requirements of this degree completion program will be awarded a B.S. in Allied Health Management, with an emphasis in their specialty.

Career Opportunities
Graduates will obtain their jobs based on their allied health degree. They will be prepared to advance in their career with the Allied Health Management degree. Duties involve the use of highly advanced technology, compassionate patient care, management of the lab/department and supervision of other technicians/technologists. Graduates are employed by hospitals, out-patient testing facilities, clinics, and bio-medical equipment manufacturers.

Accounting
Entrepreneurship/Small Business Management
Marketing

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Student Preparation
Students must have successfully completed a registry, licensure or certification. Students should also have completed an associate degree program in their allied health field.

Degree Completion Program
The Allied Health Management Program offers an online or classroom-based degree completion program. The program is offered externally, utilizing mail, e-mail, fax and Internet delivery and requires collaborative learning. Computer/Internet access is required. Each prospective student’s academic and registry credits will be individually evaluated to determine acceptability of the coursework and the sequencing of the professional courses. Every student must meet the OIT general education requirements for graduation.

Admissions Procedures and Requirements
Any B.S. applicant who meets the general admissions requirements may enroll in the Allied Health Management Program. To be eligible for admission, applicants must meet the following criteria:

1. Documentation of completion of registry, certification or licensure in an allied health field.
2. Associate degree in an allied health field.
3. All applicants are required to submit an official Application for Admission to the Distance Education Department at OIT, accompanied by a $100 non-refundable fee and official transcripts of each college or university attended.

Acceptance to the Allied Health Management Degree Program is contingent upon acceptance to OIT.

Graduation Requirements
Minimum graduation requirements for the B.S. in Allied Health Management are the successful completion of a nationally recognized licensure exam or completion of a certificate appropriate to the student’s allied health major and all courses required for the B.S. degree. They must complete 60 credits of upper-division (300-400 level) coursework from a baccalaureate degree granting institution; and complete at least 45 credits from OIT. For the Allied Health Management degree, 180 credits are required.

Allied Health Transfer Credits
If fewer than 44 allied health credits are transferred in, additional electives, preferably in the field of study, must be taken.

<table>
<thead>
<tr>
<th>Second Year</th>
<th>Fall</th>
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<tbody>
<tr>
<td>BIO 231</td>
<td>Human Anatomy and Physiology I</td>
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<td>COM 205</td>
<td>Intercultural Communications</td>
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<td>SPE 111</td>
<td>Fundamentals of Speech</td>
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<td>WRI 121</td>
<td>English Composition</td>
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<td>BIO 232</td>
<td>Human Anatomy and Physiology II</td>
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<tr>
<td>ECON 201N</td>
<td>Principles of Economics, Microeconomics</td>
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<td>BUS 321</td>
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<td>BUS 337</td>
<td>Principles of Health Care Marketing</td>
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<td>BUS 349</td>
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Information Technology

Degree Offered
Bachelor of Science in Information Technology with options in:
- Accounting
- Applications Development
- Business/Systems Analysis
- Health Informatics
- Information Technology

Objectives
The Bachelor of Science in Information Technology with its four options offers a challenging, state-of-the-art education for those interested in learning the dynamic and growing field of information technology. The field is interdisciplinary, with applications to all aspects of the economy. Graduating students are prepared to bridge the technology and management disciplines in their organizations. Core business disciplines taught include analytical skills and problem solving; business organization and management; project management; leadership, teams, and communications. In addition to the core business disciplines, students choose an information technology focus in one of three options: applications development, business/systems analysis or accounting. Each option is designed to produce graduates with the competencies necessary to succeed in the workplace or pursue further graduate level education.
Career Opportunities
The OIT Information Technology degree with four options prepares students for a wide range of professions including accounting information systems, database administration, systems analyst, business systems consultant, network analyst, software applications specialist, PC support technician, technical writer, Web administrator and as vendor representatives for both hardware and software firms. Information Technology graduates are currently employed at firms including Consolidated Freightways, Hewlett-Packard, Microsoft and Intel. Through a combination of technical skills and business understanding, Information Technology graduates are uniquely prepared for faster advancement than many of their contemporaries.

Graduation Requirements
Graduation requirements for the Bachelor of Science Degree in Information Technology include 180 credit hours for the Accounting Option, 181 credit hours for the Applications Development option, 181 credit hours for the Business/Systems Analysis option, and 182 credits for the Health Informatics option.

Accounting Option
The Information Technology Accounting Option combines coursework in accounting and information technology. Students will acquire the technical, accounting, and interpersonal skills needed to prepare them for successful careers in accounting and accounting information systems. This unique program meets the needs of accounting students entering today's technology-oriented marketplace. Students entering this program will receive intensive exposure and preparation in information systems. In addition, they will develop the skills and tools required to analyze, design, and implement different types of accounting systems.

Upon graduation, students selecting this option should have sufficient knowledge to sit for the Certified Public Accountant (CPA) and the Certified Management Accountant (CMA) exams. This program prepares students for a variety of careers in accounting, financial management, management advisory services, and information technology.

Bachelor of Science in Information Technology, Accounting Option
Curriculum
Required courses and recommended terms during which they should be taken:

Freshman Year Fall
MIS 101 Word Processing Software Laboratory 1
PSY 201 Psychology 3
WRI 121 English Composition 3
Humaneities elective 3
Math, Science, Social Science elective 3
Total 13

Freshman Year Winter
ECO 202N Principles of Economics, Macroeconomics 3
MATH 111 College Algebra 4
MIS 102 Spreadsheet Software Laboratory 1
SPE 111 Fundamentals of Speech 3
WRI 122 English Composition 3
Math, Science, Social Science elective 3
Total 17

Freshman Year Spring
ECO 201N Principles of Economics, Microeconomics 3
MIS 103 Presentation Graphics Software Laboratory 1
MIS 113 Introduction to Relational Databases 3
SPE 321 Small Group and Team Communication 3
Humaneities elective 3
Math, Science, Social Science elective 3
Total 16

Sophomore Year Fall
ACC 201 Principles of Accounting I 4
BUS 215 Principles of Management 3
MATH 361 Statistical Methods I 4
MIS 206 Introduction to Management Information Systems 3
Humaneities elective 3
Total 17

Sophomore Year Winter
ACC 202 Principles of Accounting II 4
BUS 306 Principles of Marketing 3
MATH 371 Finite Mathematics and Calculus I 4
MIS 256 Hardware/Software Integration 4
Total 15

Sophomore Year Spring
ACC 203 Principles of Managerial Accounting 4
ACC 205 Computerized Accounting 3
WRI 227 Technical Report Writing 3
Math, Science, Social Science elective 3
Total 13

Junior Year Fall
ACC 331 Intermediate Accounting I 4
BUS 445 Business Presentations 4
MIS 312 Systems Analysis 4
MIS 375 Decision Support Systems 3
WRI 327 Advanced Technical Writing 3
Total 18

Junior Year Winter
ACC 320 Cost Accounting I 4
ACC 325 Finance 4
ACC 332 Intermediate Accounting II 4
MIS 313 Relational Database Systems 4
Total 16

Junior Year Spring
ACC 333 Intermediate Accounting III 4
ACC 405 Management Information Systems elective 3
Math, Science, Social Science elective 3
Total 14

Senior Year Fall
ACC 411 Income Tax Procedures 4
ACC 435 Auditing 4
ACC 496 Senior Project 3
Laboratory Science elective 4
Total 15

Senior Year Winter
ACC 431 Advanced Accounting I 4
ACC 497 Management Information Systems elective 3
Social Science elective 3
Total 13

Senior Year Spring
ACC 465 Case Studies in Accounting 4
BUS 355 Business Law 3
Management Information Systems elective* 3
Math, Science, Social Science elective 3
Total 13

* Any MIS course that is not already required.
Applications Development Option

The Information Technology Applications Development Option focuses on the acquisition of theory and technical competencies to prepare students for successful careers as applications programmers. The curriculum is designed to produce graduates with the competencies, skills, and attitudes necessary for success in the workplace or further graduate education. The management components include analytical skills and problem solving; business organization and management; project management; leadership, teams, and communications. Information technology skill areas include database development, applications development, Web development, technical support, telecommunications and additional technical electives.

Bachelor of Science in Information Technology, Applications Development Option

Curriculum

Required courses and recommended terms during which they should be taken:

Freshman Year Fall
BUS 215 Principles of Management 3
MATH 111 College Algebra 4
MIS 113 Introduction to Relational Databases 3
MIS 115 Visual BASIC Programming 4
WRI 121 English Composition 3
Total 17

Freshman Year Winter
ECO 202N Principles of Economics, Macroeconomics 3
MIS 310 Computer Organization 4
MIS 215 Business Application Programming 4
SPE 111 Fundamentals of Speech 3
Total 14

Sophomore Year Fall
ACC 201 Principles of Accounting I 4
CST 116 C++ Programming I 4
WRI 227 Technical Report Writing 3
Total 14

Sophomore Year Winter
ACC 202 Principles of Accounting II 4
CST 126 C++ Programming II 4
MIS 256 Hardware/Software Integration 4
SPE 321 Small Group and Team Communication 3
Total 15

Sophomore Year Spring
ACC 205 Principles of Managerial Accounting 4
CST 136 Object-Oriented Programming with C++ 4
MATH 361 Statistical Methods I 4
MIS 325 Computer Networks I 4
Total 16

Junior Year Fall
MATH 327 Discrete Mathematics 4
MIS 312 Systems Analysis 4
MIS 457 Computer Networks II 4
PSY 201 Psychology 3
Total 15

Junior Year Winter
MATH 371 Finite Mathematics and Calculus I 4
MIS 313 Relational Database Systems 4
WRI 327 Advanced Technical Writing 3
WRI 350 Documentation Development 3
Laboratory Science elective 4
Total 15

Junior Year Spring
MIS 331 Introduction to Oracle DBMS and PL/SQL 4
MIS 335 Database Programming 3
MIS 495 Senior Project Proposal 1
Math/Science elective 4
Technical elective* 3
Total 15

Senior Year Fall
MIS 498 Senior Project (upper-division) 3
Business elective (upper-division) 3
Humanities elective 3
Math, Science, Social Science elective 3
Social Science elective 3
Total 15

Senior Year Winter
MIS 497 Senior Project 3
Humanities elective 3
Math, Science, Social Science elective 3
Technical elective* 3
Technical elective* 3
Total 15

* Any MIS or CST class approved by your adviser which is not required in your program excepting CST 101 and CST 102. Alternatively, ACC 405 or any appropriate GIS course approved by your adviser.

Business/Systems Analysis Option

The Information Technology Business/Systems Analysis Option integrates technical, business, and interpersonal skills to prepare students for successful careers as business/systems analysts. The curriculum is designed to produce graduates with the competencies, skills, and attitudes necessary for success in the workplace or further graduate education. The management components include analytical skills and problem solving; business organization and management; project management; leadership, teams, and communications. Students gain theoretical and practical experience with systems analysis and design, project management, personal computers, operating systems, applications, networks, Web page design and development and databases.
## Bachelor of Science in Information Technology, Business/Systems Analysis Option

### Curriculum

Required courses and recommended terms during which they should be taken:

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* Any MIS or CST class approved by your adviser which is not required in your program excepting CST 101 and CST 102. Alternatively, ACC 405 or any appropriate GIS course approved by your adviser.

### Health Informatics Option

#### Objectives and Career Opportunities

The U.S. health care system is in the midst of a technology transformation, moving from paper-based records to integrated electronic health information systems. Technology transformation, specifically electronic health records, data warehouses and integrated health information systems, is changing the face of health care organizations and the delivery of care. One of the key factors in assuring a successful transformation is meeting the needs for highly qualified health informatics professionals and specialists.

The new roles for health informatics professionals are the result of the convergence of information management and information technologies. Health informatics professionals work in operational and management positions throughout the health care industry in such locales as hospitals, clinics, managed care organizations, software vendors and government agencies. Health informatics professionals are being called upon to design and use emerging information technologies with the goal of helping providers and patients access and utilize key information in both clinical and business management.

Health Informatics provides support in areas such as clinical decision making, research, financial and revenue cycle management, and personal health management.

#### Degree Requirements

The Health Informatics option requires 182 term hours. Required course work is outlined in the curriculum section. Transfer students should consult with the Registrar’s Office and the Management Department to determine which of their courses will satisfy OIT course requirements.
**Bachelor of Science in Information Technology, Health Informatics Option**

**Curriculum**

Required courses and recommended terms during which they should be taken:

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<td>Organizational Change and Development</td>
</tr>
<tr>
<td>Math, Science, Social Science elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
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</table>

<table>
<thead>
<tr>
<th>Senior Year</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 441</td>
<td>Leadership</td>
</tr>
<tr>
<td>BUS 349</td>
<td>Human Resource Management</td>
</tr>
<tr>
<td>BUS 458</td>
<td>Process Improvement</td>
</tr>
<tr>
<td>MIS 479</td>
<td>Current Topics in Information Technology</td>
</tr>
<tr>
<td>MIS 498</td>
<td>Senior Project</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
</tr>
</tbody>
</table>

* Any MIS, preferably MIS 390/490, or CST class approved by your adviser which is not required in your program, excepting CST 101 and CST 102. Alternatively, any appropriate GIS course approved by your adviser.

**Accounting, Entrepreneurship/Small Business, and Marketing Programs**

**Degrees Offered**

Bachelor of Science in Management, with options in:

- Accounting
- Entrepreneurship/Small Business Management
- Marketing

**Objectives**

The Management curriculum integrates a solid core of business/management courses with the unique benefits of one of the country’s leading institutes of technology. Degree options include accounting, entrepreneurship/small business management, and marketing. The mission of the Department of Management is to prepare leaders to manage organizations in the high technology environments of the 21st century. Students develop their abilities to contribute to an organization’s performance through hands-on experience built on a solid theoretical base. Students will also be prepared for graduate level education, such as the Master’s in Business Administration (MBA) degree.

**Career Opportunities**

The Department of Management is known for producing “user-friendly” graduates. Graduate placement rate is among the best in the state.

Recruiters from industry and government agencies regularly visit the campus in search of Department of Management bachelor degree candidates. Initial job titles include staff accountant, cost analyst, business unit manager, supervisor, marketing specialist, and sales manager.

**Graduation Requirements**

Graduation requirements for the Bachelor of Science degree in Management include 181 credit hours for the Entrepreneurship/Small Business Management option, 181 credit hours for the Marketing option, and 181 credit hours for the Accounting option.
Accounting Option

The accounting option is designed to prepare students for careers in public or private accounting. Students become familiar with computerized accounting applications and skilled in the principles of tax, financial, and cost accounting. Upon graduation students selecting this option should have sufficient knowledge to sit for the Certified Public Accountant (CPA) and the Certified Management Accountant (CMA) exams.

Bachelor of Science in Management, Accounting Option

Curriculum

Required courses and recommended terms during which they should be taken:

Freshman Year  Fall
MIS 101  Word Processing Software Laboratory 1 6
PSY 201  Psychology 3 4
WRI 121  English Composition 3 4
Humanities elective 3 3
Math, Science, Social Science elective 3 3
Total 16 13

Freshman Year  Winter
ECO 202N  Principles of Economics, Macroeconomics 3 3
MATH 111  College Algebra 4 4
MIS 102  Spreadsheet Software Laboratory 1 5
SPE 321  Small Group and Team Communication 3 4
WRI 122  English Composition 3 4
Total 14 10

Sophomore Year  Fall
ACC 201  Principles of Accounting I 4 4
BUS 306  Principles of Management 3 4
MATH 361  Statistical Methods I 4 5
MIS 206  Introduction to Management Information Systems 3 3
Total 14 12

Sophomore Year  Winter
ACC 202  Principles of Accounting II 4 4
BUS 306  Principles of Marketing 3 4
MATH 371  Finite Mathematics and Calculus I 4 5
Humanities elective 3 3
Total 14 12

Sophomore Year  Spring
ACC 203  Principles of Managerial Accounting 4 4
ACC 205  Computerized Accounting 3 4
WRI 227  Technical Report Writing 3 4
Math, Science, Social Science elective 3 3
Elective 3 3
Total 16 15

Junior Year  Fall
ACC 320  Cost Accounting I 4 4
ACC 325  Finance 4 4
ACC 332  Intermediate Accounting II 4 4
Social Science elective 3 3
Total 15 13

Junior Year  Winter
ACC 321  Cost Accounting II 4 4
ACC 333  Intermediate Accounting III 4 4
ACC 405  Accounting Information Systems 4 4
Math, Science, Social Science elective 3 3
Total 16 15

Junior Year  Spring
ACC 411  Income Tax Procedures 4 4
ACC 435  Auditing 4 4
ACC 496  Senior Project 3 4
Math, Science, Social Science elective 3 4
Total 16 14

Senior Year  Fall
ACC 412  Corporate Taxation 4 4
ACC 431  Advanced Accounting I 4 4
ACC 497  Senior Project 3 4
Laboratory Science elective 1 4
Total 15 12

Senior Year  Winter
ACC 412  Advanced Accounting II 4 4
ACC 465  Case Studies in Accounting 4 4
BUS 355  Business Law 3 4
Math, Science, Social Science elective 3 4
Elective 3 3
Total 15 14

Entrepreneurship/Small Business Management Option

Students selecting the entrepreneurship/small business management option should equip themselves to be managers with complete understanding of all aspects of a business—either a small business or a business unit manager in a larger business. The focus is on the unique demands placed on this type of manager. Skills in writing business plans, starting and operating a business, cash flow management, costing and pricing products and global opportunities are emphasized and developed.

Bachelor of Science in Management, Entrepreneurship/Small Business Management Option

Curriculum

Required courses and recommended terms during which they should be taken:

Freshman Year  Fall
BUS 215  Principles of Management 3 3
MIS 101  Word Processing Software Laboratory 1 5
PSY 201  Psychology 3 4
WRI 121  English Composition 3 4
Humanities elective 3 4
Total 13 10

Freshman Year  Winter
ECO 202N  Principles of Economics, Macroeconomics 3 3
MATH 111  College Algebra 4 4
MIS 102  Spreadsheet Software Laboratory 1 5
SPE 311  Fundamentals of Speech 3 4
WRI 122  English Composition 3 4
Total 14 10

Sophomore Year  Fall
ACC 201  Principles of Accounting I 4 4
BUS 215  Principles of Management 3 4
MATH 361  Statistical Methods I 4 5
MIS 206  Introduction to Management Information Systems 3 3
Total 14 12

Sophomore Year  Winter
ACC 202  Principles of Accounting II 4 4
BUS 306  Principles of Marketing 3 4
MATH 371  Finite Mathematics and Calculus I 4 5
Humanities elective 3 3
Total 14 12

Sophomore Year  Spring
ACC 203  Principles of Managerial Accounting 4 4
ACC 205  Computerized Accounting 3 4
WRI 227  Technical Report Writing 3 4
Math, Science, Social Science elective 3 3
Elective 3 3
Total 16 15

Junior Year  Fall
ACC 331  Intermediate Accounting I 4 4
BUS 445  Business Presentations 4 4
MIS 312  Systems Analysis 4 4
MIS 375  Decision Support Systems 3 4
WRI 327  Advanced Technical Writing 3 4
Total 18 16

Junior Year  Winter
ACC 320  Cost Accounting I 4 4
ACC 325  Finance 4 4
ACC 332  Intermediate Accounting II 4 4
Social Science elective 3 3
Total 15 13

Junior Year  Spring
ACC 321  Cost Accounting II 4 4
ACC 333  Intermediate Accounting III 4 4
ACC 405  Accounting Information Systems 4 4
Math, Science, Social Science elective 3 3
Total 16 15

Senior Year  Fall
ACC 411  Income Tax Procedures 4 4
ACC 431  Advanced Accounting I 4 4
ACC 497  Senior Project 3 4
Laboratory Science elective 1 4
Total 15 12

Senior Year  Winter
ACC 412  Corporate Taxation 4 4
ACC 465  Case Studies in Accounting 4 4
BUS 355  Business Law 3 4
Math, Science, Social Science elective 3 4
Elective 3 3
Total 15 14
Sophomore Year  Fall
ACC 201 Principles of Accounting I  4
or
BUS 321 Financial Accounting  3
MATH 361 Statistical Methods I  4
MIS 113 Introduction to Relational Databases  3
WRI 227 Technical Report Writing  3
Elective  3
Total  16/17

Sophomore Year  Winter
ACC 203 Principles of Managerial Accounting  4
or
BUS 322 Managerial Accounting  3
BUS 306 Principles of Marketing  3
BUS 349 Human Resource Management  3
MATH 371 Finite Mathematics and Calculus I  4
Math, Science, Social Science elective  3
Total  16/17

Junior Year  Fall
BUS 346 Business Research Methods  3
MIS 375 Decision Support Systems  3
PHIL 331 Ethics: Moral Issues in the Professions  3
Laboratory Science elective  4
Elective  3
Total  15

Junior Year  Winter
BUS 314 Entrepreneurship  3
IMGT 326 Operational Budgeting  3
PSY 347 Organizational Behavior  3
Math, Science, Social Science elective  3
Elective  3
Total  16

Junior Year  Spring
BUS 335 Small Business Management  3
IMGT 336 Total Quality Management  3
IMGT 495 Senior Project Proposal  3
Elective  3
Elective  3
Total  16

Senior Year  Fall
BUS 441 Leadership  3
BUS 445 Business Presentations  4
IMGT 311 Principles of Operations Management  3
IMGT 496 Senior Project  3
Elective  3
Total  16

Senior Year  Winter
BUS 447 Controversial Issues in Management  3
IMGT 497 Senior Project  3
Humaneites elective  3
Math/Science/Social Science elective  3
Elective  3
Total  15

Senior Year  Spring
BUS 434 Global Marketing  3
IMGT 457 Cases in Strategic Management  3
MIS 225 Business on the Internet  4
PSY 410 Organizational Change and Development  3
Elective  3
Total  16

Marketing Option

The marketing option provides students with a broad background in business management with a strong emphasis in modern marketing concepts and practices. Marketing graduates enjoy careers in management, advertising, research, consulting, distribution, sales and entrepreneurial enterprises. This program provides the student with a core of management courses, in-depth business computer applications, detailed marketing courses, experience on individual and team projects, and preparation for entry into a master's program.

Bachelor of Science in Management, Marketing Option

Curriculum

Required courses and recommended terms during which they should be taken:

Freshman Year  Spring
ECO 201N Principles of Economics, Microeconomics  3
MIS 103 Presentation Graphics Software Laboratory  1
Humaneites elective  3
Laboratory Science elective  4
Math, Science, Social Science elective  3
Total  14

Sophomore Year  Fall
ACC 201 Principles of Accounting I  4
or
BUS 321 Financial Accounting  3
BUS 308 Principles of International Business  3
MATH 361 Statistical Methods I  4
MIS 113 Introduction to Relational Databases  3
WRI 227 Technical Report Writing  3
Total  16/17

Sophomore Year  Winter
ACC 203 Principles of Managerial Accounting  4
or
BUS 322 Managerial Accounting  3
BUS 306 Principles of Marketing  3
MATH 371 Finite Mathematics and Calculus I  4
Math, Science, Social Science elective  3
Elective  3
Total  16/17

Junior Year  Spring
MIS 206 Introduction to Management Information Systems  3
SPE 321 Small Group and Team Communication  3
Math, Science, Social Science elective  3
Elective  3
Total  15

Junior Year  Winter
BUS 399 Marketing Special Topics  3
BUS 467 Service Management  3
MIS 375 Decision Support Systems  3
Math, Science, Social Science elective  3
Elective  3
Total  15

Junior Year  Spring
IMGT 326 Total Quality Management  3
IMGT 457 Cases in Strategic Management  3
WRI 121 English Composition  3
Total  13

Freshman Year  Fall
BUS 215 Principles of Management  3
COM 205 Intercultural Communication  3
MIS 100 Word Processing Software Laboratory  1
PSY 201 Psychology  3
WRI 121 English Composition  3
Total  13

Freshman Year  Winter
ECO 201N Principles of Economics, Microeconomics  3
MATH 111 College Algebra  3
MIS 102 Spreadsheet Software Laboratory  1
SPE 111 Fundamentals of Speech  3
WRI 122 English Composition  3
Total  14

Junior Year  Fall
ACC 320 Cost Accounting I  4
or
BUS 325 Finance Management  3
BUS 318 Consumer Behavior  3
BUS 319 Advertising Management  3
WRI 327 Advanced Technical Writing  3
Math, Science, Social Science elective  3
Total  15/16

Junior Year  Winter
BUS 336 Sales and Sales Management  3
BUS 355 Business Law  3
BUS 414 Marketing Research  3
IMGT 336 Total Quality Management  3
IMGT 495 Senior Project Proposal  1
Elective  3
Total  16
Senior Year  
**Fall**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 435</td>
<td>New Product Development and Pricing</td>
<td>3</td>
</tr>
<tr>
<td>BUS 445</td>
<td>Business Presentations</td>
<td>4</td>
</tr>
<tr>
<td>IMGT 496</td>
<td>Senior Project</td>
<td>3</td>
</tr>
<tr>
<td>PSY 410</td>
<td>Organizational Change and Development</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

**Senior Year  
**Winter**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 473</td>
<td>Marketing Plan Development</td>
<td>3</td>
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<tr>
<td>IMGT 497</td>
<td>Senior Project</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Business elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Humanities elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

**Senior Year  
**Spring**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 434</td>
<td>Global Marketing</td>
<td>3</td>
</tr>
<tr>
<td>BUS 466</td>
<td>Marketing Policy</td>
<td>3</td>
</tr>
<tr>
<td>MIS 225</td>
<td>Business on the Internet</td>
<td>4</td>
</tr>
<tr>
<td>PSY 347</td>
<td>Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>WRI 420</td>
<td>Document Design</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

Specialization Programs

OIT offers three specializations as a complement to the three Bachelor of Science degree options in Management. These are in Accounting, Entrepreneurship and Small Business Management, and Marketing. The courses included in these programs have been selected from the curricular content of the three corresponding degree options.

**Accounting**

OIT’s specialization in Accounting prepares the student for a wide range of accounting-related positions in modern technological industries, financial institutions and other service-oriented businesses. The program includes training in computer software essential to accounting functions. This hands-on exposure can qualify the student for work in many high technology industries which utilize computer accounting applications.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ACC 201</td>
<td>Principles of Accounting I</td>
<td>4</td>
</tr>
<tr>
<td>ACC 202</td>
<td>Principles of Accounting II</td>
<td>4</td>
</tr>
<tr>
<td>ACC 203</td>
<td>Principles of Managerial Accounting</td>
<td>4</td>
</tr>
<tr>
<td>ACC 205</td>
<td>Computerized Accounting</td>
<td>3</td>
</tr>
<tr>
<td>MIS 101</td>
<td>Word Processing Software Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>MIS 102</td>
<td>Spreadsheet Software Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>MIS 103</td>
<td>Presentation Graphic Software Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

**Entrepreneurship and Small Business Management**

OIT’s specialization in Entrepreneurship/Small Business provides the student with foundational skills and background in business management emphasizing entrepreneurship. The student should learn skills needed to start a business successfully, gain the knowledge required to run small businesses, and develop the entrepreneurship skills to make big companies run like small companies.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 215</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>BUS 306</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>BUS 314</td>
<td>Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>BUS 335</td>
<td>Small Business Management</td>
<td>3</td>
</tr>
<tr>
<td>BUS 434</td>
<td>Global Marketing</td>
<td>3</td>
</tr>
<tr>
<td>BUS 447</td>
<td>Controversial Issues in Management</td>
<td>3</td>
</tr>
</tbody>
</table>

**Marketing**

OIT’s specialization in Marketing provides the student with a foundational background in business management with an emphasis in modern marketing concepts and practices. Upon completion, the student should be better qualified for a career in management, advertising, consulting, distribution or sales.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 215</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>BUS 306</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>BUS 318</td>
<td>Consumer Behavior</td>
<td>3</td>
</tr>
<tr>
<td>BUS 319</td>
<td>Advertising Management</td>
<td>3</td>
</tr>
<tr>
<td>BUS 326</td>
<td>Sales and Sales Management</td>
<td>3</td>
</tr>
</tbody>
</table>

**Operations Management**

**Degree Offered**

Bachelor of Science in Operations Management

**Objectives**

The Operations Management program prepares students for leadership positions in the production and service industries. Students should develop mastery of concepts, tools, and skills in management sciences and specialties. Particular emphasis is directed toward developing the ability to contribute significantly to the improvement of productivity in a quality oriented environment and to manage effectively in a team based work environment. Students will also be prepared for graduate level education, such as the Master’s in Business Administration degree.

**Career Opportunities**

Recruiters from industry and government agencies regularly visit the campus in search of bachelor's degree candidates in operations management. Initial job titles include: production planner, inventory control analyst, industrial engineer, production supervisor, and quality control manager. Typical departments in which graduates find themselves working are manufacturing, manufacturing engineering, industrial engineering, production control, finance, and quality assurance.

Students selecting the Operations Management degree will equip themselves to be managers in the challenging environment of modern manufacturing and service industries. Upon graduation they should be prepared to address critical issues related to productivity management in a global competitive economy and play leadership roles in the design and implementation of quality control and management programs. They will have mastered a wide array of microcomputer technology and software applications, giving them a competitive edge in the job market.

**Graduation Requirements**

As prescribed by the Department of Management, graduation requirements for the Bachelor of Science degree in Operations Management include 183 credit hours.
## Bachelor of Science in Operations Management

### Curriculum

Required courses and recommended terms during which they should be taken:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Fall</th>
<th>BUS 215</th>
<th>Principles of Management 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIS 101</td>
<td>Word Processing Software Laboratory</td>
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</tr>
<tr>
<td></td>
<td>PSY 201</td>
<td>Psychology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WRI 121</td>
<td>English Composition</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ECT 321</td>
<td>Humanities elective</td>
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<td></td>
<td>Elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Freshman Year | Winter | MATH 111 | College Algebra | 4 |
|---------------|--------|---------|----------------|
|               | MIS 102 | Spreadsheet Software Laboratory | 1 |
|               | SPE 111 | Fundamentals of Speech | 3 |
|               | WRI 122 | English Composition | 3 |
|               | Elective | 3 |
| Total | 14 |

| Sophomore Year | Fall | ACC 201 | Principles of Accounting I | 4 |
|----------------|------|---------|---------------------------|
| or | BUS 321 | Financial Accounting | 3 |
| or | MATH 361 | Statistical Methods I | 4 |
| or | MIS 206 | Introduction to Management | 3 |
| or | MIS 335 | Introduction to Management | 3 |
| or | MIS 345 | Engineering Economy | 3 |
| or | SPE 321 | Small Group and Team Communication | 3 |
| or | Elective | 4 |
| Total | 16/17 |

| Sophomore Year | Winter | ACC 203 | Principles of Managerial Accounting | 4 |
|----------------|--------|---------|---------------------------|
| or | BUS 322 | Managerial Accounting | 3 |
| or | BUS 355 | Business Law | 3 |
| or | MATH 371 | Finite Mathematics and Calculus I | 3 |
| or | MIS 206 | Information Systems | 3 |
| or | Elective | 3 |
| Total | 16/17 |

| Junior Year | Fall | BUS 467 | Service Management | 3 |
|--------------|------|---------|----------------|
| or | IMGT 311 | Principles of Operations Management | 3 |
| or | MIS 375 | Decision Support Systems | 3 |
| or | Math, Science, Social Science elective | 3 |
| or | Elective | 3 |
| Total | 15 |

| Junior Year | Winter | BUS 458 | Process Improvement | 3 |
|--------------|--------|---------|----------------|
| or | IMGT 312 | Operations Scheduling and Control I | 3 |
| or | IMGT 326 | Operational Budgeting | 3 |
| or | WRI 327 | Advanced Technical Writing | 3 |
| or | Math, Science, Social Science elective | 3 |
| Total | 15 |

| Senior Year | Fall | IMGT 445 | Project Management | 3 |
|--------------|------|---------|----------------|
| or | IMGT 486 | The Lean Enterprise | 3 |
| or | IMGT 496 | Math, Science, Social Science elective | 3 |
| or | Elective | 3 |
| Total | 15 |

| Senior Year | Winter | IMGT 497 | Senior Project | 3 |
|--------------|--------|---------|----------------|
| or | Elective | 3 |
| or | Elective | 3 |
| or | Elective | 3 |
| Total | 15 |

| Senior Year | Spring | IMGT 498 | Quality Control Techniques | 3 |
|--------------|--------|---------|----------------|
| or | Elective | 3 |
| or | Elective | 3 |
| or | Elective | 3 |
| Total | 12 |

### Business Minor

The Minor in Business recognizes the achievement of 21 credits in business courses, some of which can be related to the student’s chosen profession. Some of the courses may be included in the student’s requirements for a bachelor’s degree from OIT. The Minor in Business may prove valuable to a technical student who ventures into management or consulting in his or her career field. It may enhance employability and improve graduate school possibilities. This minor is open to all majors except those in the Department of Management.

### Information Technology Minor

The Information Technology (IT) Minor recognizes the achievement of 28 credits in technical courses. Some of the courses may be included in the student’s requirements for a bachelor’s degree from OIT. The IT minor may prove valuable to management or technical students who want to demonstrate that they have additional skills in management information system and information technology areas. It may enhance employability and improve graduate school possibilities. The minor is open to all majors except IT.

### Requirements of Minor:

#### Business Minor

- BUS 467 | Service Management | 3
- IMGT 311 | Principles of Operations Management | 3
- MIS 375 | Decision Support Systems | 3
- Math, Science, Social Science elective | 3
- Elective | 3
- Total | 15

#### Information Technology Minor

- ACC 201 | Principles of Accounting I | 4
- or | BUS 321 | Financial Accounting | 3
- or | ACC 203 | Principles of Accounting III | 4
- or | BUS 215 | Principles of Managerial Accounting | 3
- or | BUS 304 | Engineering Management | 3
- or | BUS 317 | Health Care Management | 3
- or | BUS 306 | Principles of Marketing | 3
- or | PSY 347 | Organizational Behavior | 3
- or | MIS 206 | Information Systems | 3
- or | MIS 335 | Database Programming | 3
- or | MIS 385 | Decision Support Systems | 3
- Total | 28
International Business Minor

The Minor in International Business recognizes the achievement of 22 credits in international courses. The Minor in International Business may prove valuable to a technical student who ventures into management or consulting in his or her career field. It may enhance employability and improve graduate school possibilities. This minor is open to all majors and is especially recommended for students with an interest in management and/or global affairs.

Requirements of Minor:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 308</td>
<td>Principles of International Business</td>
<td>3</td>
</tr>
<tr>
<td>COM 205</td>
<td>Intercultural Communication</td>
<td>3</td>
</tr>
<tr>
<td>BUS 434</td>
<td>Global Marketing</td>
<td>3</td>
</tr>
<tr>
<td>ECO 367</td>
<td>International Economics and Finance Management</td>
<td>4</td>
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<tr>
<td>IMGT 488 or PSCI 250</td>
<td>Multinational Operations or Introduction to World Politics</td>
<td>3</td>
</tr>
<tr>
<td>BUS 387 or PSCI 326 or PSCI 497</td>
<td>International Human Resource Management or World Politics in Transition or United States Foreign Policy</td>
<td>3</td>
</tr>
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<td>Total</td>
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</tbody>
</table>

Suggested Social Science Electives

<table>
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<tr>
<th>Course</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>GEOG 106</td>
<td>Cultural Geography</td>
<td>3</td>
</tr>
<tr>
<td>HIST 103</td>
<td>History of Western Civilization</td>
<td>3</td>
</tr>
<tr>
<td>PSCI 326</td>
<td>World Politics in Transitions</td>
<td>3</td>
</tr>
<tr>
<td>PSCI 497</td>
<td>United States Foreign Policy</td>
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</table>

Suggested Open Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 320</td>
<td>Advanced Intercultural Communication</td>
<td>3</td>
</tr>
<tr>
<td>Any foreign language sequence</td>
<td></td>
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</tr>
</tbody>
</table>

Suggested Humanities Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any second year foreign language sequence</td>
<td></td>
<td>4-4-4</td>
</tr>
</tbody>
</table>

Strongly Recommended

Study Abroad Program—
1 semester/2 terms 4-4-4

A passing grade in all courses and a cumulative GPA of 2.0 or better is required to be awarded the minor. Students are encouraged to consult with a management adviser to schedule courses.

Post Baccalaureate Certificate in Accounting

This certificate is available to students who have a baccalaureate degree and are continuing their education in accounting. Completion of the certificate will allow students to meet the requirements for admission to the Certified Public Accountant (CPA) exam and prepare them for a variety of career paths including CPA and Certified Management Accountant (CMA).

Required Courses (32 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 320</td>
<td>Cost Accounting I</td>
<td>4</td>
</tr>
<tr>
<td>ACC 331</td>
<td>Intermediate Accounting II</td>
<td>4</td>
</tr>
<tr>
<td>ACC 332</td>
<td>Intermediate Accounting II</td>
<td>4</td>
</tr>
<tr>
<td>ACC 333</td>
<td>Intermediate Accounting III</td>
<td>4</td>
</tr>
<tr>
<td>ACC 405</td>
<td>Accounting Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>ACC 411</td>
<td>Income Tax Procedures</td>
<td>4</td>
</tr>
<tr>
<td>ACC 431</td>
<td>Advanced Accounting I</td>
<td>4</td>
</tr>
<tr>
<td>ACC 435</td>
<td>Auditing</td>
<td>4</td>
</tr>
</tbody>
</table>

Elective Courses (Choose at least 15 credits from the following courses)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 321</td>
<td>Cost Accounting II</td>
<td>4</td>
</tr>
<tr>
<td>ACC 325</td>
<td>Finance</td>
<td>4</td>
</tr>
<tr>
<td>ACC 412</td>
<td>Corporate Taxation</td>
<td>4</td>
</tr>
<tr>
<td>ACC 432</td>
<td>Advanced Accounting II</td>
<td>4</td>
</tr>
<tr>
<td>ACC 465</td>
<td>Case Studies in Accounting</td>
<td>4</td>
</tr>
<tr>
<td>BUS 345</td>
<td>Fraud Examination</td>
<td>3</td>
</tr>
<tr>
<td>BUS 355</td>
<td>Business Law</td>
<td>4</td>
</tr>
<tr>
<td>MIS 312</td>
<td>Systems Analysis</td>
<td>4</td>
</tr>
</tbody>
</table>

Note: At least 36 credits must be taken at OIT.
Manufacturing and Mechanical Engineering and Technology Department

Brian Moravec, Department Chair
Office: Boivin Hall, 163

Joe Stuart, Program Director Undergraduate Manufacturing Engineering Technology
Wangping Sun, Program Director Graduate Manufacturing Engineering Technology
Hugh Currin, Program Director Mechanical Engineering
Brian Moravec, Program Director Mechanical Engineering Technology

Lawrence Wolf, Program Director Portland Programs

Professors: R. Shih, L. Wolf

Associate Professors: J. Anderson, T. Brower, H. Currin, N. Mead, B. Moravec

Assistant Professors: J. Stuart, W. Sun, M. Timmerman

Instructor: M. Smith-Lee

Degrees Offered
Master of Science in Manufacturing Engineering Technology
Bachelor of Science in Manufacturing Engineering Technology

Manufacturing Engineering Technology

Program Mission Statement
The Manufacturing Engineering Technology Program at Oregon Institute of Technology is an applied engineering technology program. Its mission is to provide graduates the skills and knowledge for successful careers in Manufacturing Engineering Technology.

Primary Goals
- Provide graduates the skills and knowledge necessary for immediate employment while also assuring abilities required for continued academic work.
- Enable student to be effective communicators, life-long learners, and ethical engineering professionals.
- Develop and maintain partnerships with public and private institutions to ensure a relevant, high quality program.

Career Opportunities
Manufacturing Engineering graduates will find a wide range of opportunities for employment in manufacturing design, research and development, testing, educational institutions, consulting and business. Manufacturing Engineering Technology also prepares students for further study in graduate school. In today's engineering environment, manufacturing engineers are often called upon to perform a wide range of tasks, from designing and purchasing manufacturing equipment to improving and troubleshooting the manufacturing process. Manufacturing engineers are involved in the design and continuous improvement of products, manufacturing equipment and production tooling. The Manufacturing Engineering curriculum provides education in a variety of areas including manufacturing process, robotics and automation, industrial controls, manufacturing tool design, computer aided design and manufacturing, engineering materials, manufacturing planning and quality control. Technical electives allow the student flexibility in developing technical breadth or focus in their areas of interest.

Objectives of the Program
The objective of the Manufacturing Engineering Technology undergraduate program is to offer the student a quality education that provides the greatest possible opportunity for rewarding and successful careers. This includes practical training and technical education in engineering, manufacturing processes, and manufacturing equipment as well as supplemental coursework in communications, mathematics, science, social science, and business.

The objective of the graduate program in Manufacturing Engineering Technology is to offer students an advanced level of education that will help them to be successful in their professional career. This includes the theoretical and practical training in manufacturing systems, design for manufacturability, development of lean enterprise, quality engineering, computer-aided manufacturing, project management and information systems.

Student Preparation
Students planning to enter the Manufacturing Engineering Technology Program are strongly encouraged to take mathematics and science training in high school. In addition, courses such as drafting, CAD, computer skills, and industrial arts will prove beneficial.

Cooperative Education Program
Students in the bachelor of science degree program have an opportunity to work in industry for a specified time and receive college credit. They are encouraged to meet with the Manufacturing Engineering Technology Undergraduate Program Director. MFG stu-
students have the opportunity to participate in the state-wide MECOP internship program. For information, see the following Web site: http://mecop.orst.edu.

**Accreditation**

The Bachelor of Science in Manufacturing Engineering Technology is accredited by the Technology Accreditation Commission (TAC) of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700. ABET is a specialized accrediting board recognized by the Council for Higher Education and/or the Secretary of the U.S. Department of Education.

**Degree Requirements—Master of Science**

The Master of Science in Manufacturing Engineering Technology requires completing 45 credit hours of graduate work, with at least 30 credit hours of graduate coursework from the following four Curriculum Content Areas (CCAs):

1. Engineering Science and Design Technology
2. Manufacturing Software and Computer Integration
3. Advanced Manufacturing Materials and Processes Technology

In addition to the 30 CCA credit hours, students must complete 12 credits toward thesis or 9 credits toward an approved project and three credits in graduate seminars. Students must take at least one course in each of the four CCAs and three courses in at least one CCA. All graduate courses are three credits each. See Master’s student adviser to complete an academic plan.

**Degree Requirements**

The Bachelor of Science in Manufacturing Engineering Technology requires completing 192 credit hours, as prescribed in the following curriculum outline. Several of these courses are titled Manufacturing elective, and allow the student some flexibility to pursue specific career objectives within the manufacturing engineering field. Upper-division manufacturing engineering technology courses not specifically required for graduation, as well as selected upper-division mechanical engineering technology courses and other approved courses, may be used as Manufacturing electives. Students should contact their adviser for specific details as to which courses qualify as manufacturing electives. In order to satisfy the engineering science elective, the student must complete one of the following courses: Dynamics (ENGR 212), Fluid Mechanics (MET 218), or Thermodynamics (ENGR 355). In order to satisfy the business/management restricted elective the student must complete one of the following courses: BUS 304, BUS 305, BUS 355, BUS 355, IMGT 311, IMGT 336, or IMGT 482.

**Bachelor of Science in Manufacturing Engineering Technology**

**Curriculum**

Required courses and recommended terms during which they should be taken:

**Freshman Year**

**Fall**
- MATH 111 College Algebra 4
- MET 111 Orientation I 2
- WRI 121 English Composition 3
- Humanities/Social Science elective * 3

**Total** 15

**Winter**
- CHE 101 Elementary Chemistry 3
- CHE 104 Elementary Chemistry Laboratory 1
- MATH 112 Trigonometry 4
- MFG 120 Manufacturing Processes I 4
- WRI 122 English Composition 3
- MET 112 Orientation II 2

**Total** 17

**Spring**
- ENGR 211 Statics ** 4
- MATH 252 Integral Calculus 4
- MFG 314 Geometric Dimensioning and Tolerancing 3
- PHY 201/221 General Physics 4
- MET 242 CAD for Mechanical Design II 2

**Total** 15

**Sophomore Year**

**Fall**
- ENGR 213 Strength of Materials ** 4
- MATH 361 Statistical Methods I 4
- MFG 314 Geometric Dimensioning and Tolerancing 3
- PHY 201/221 General Physics 4
- MET 242 CAD for Mechanical Design II 2

**Total** 17

**Winter**
- ENGR 213 Strength of Materials ** 4
- MATH 361 Statistical Methods I 4
- MFG 112 Introduction to Manufacturing Processes 3
- PHY 201/221 General Physics 4

**Total** 15

**Spring**
- ENGR 236 Fundamentals of Electric Circuits 3
- MATH 362 Statistical Methods II 4
- MET 160 Materials I 3
- WRI 227 Technical Report Writing 3
- ENGR 266 Computer Programming for Engineers 3

**Total** 16
** ENGT 230, ENGT 231, ENGT 232 sequence may be substituted for the ENGR 211, ENGR 212 sequence.

### Concurrent Degree

The Mechanical and Manufacturing Engineering Technology Department provides the opportunity for the interested student to earn concurrent degrees in Manufacturing Engineering Technology (MFG) and Mechanical Engineering Technology (MET) or Mechanical Engineering (MECH). Students who earn both degrees are highly sought after and have been very successful in industry. The concurrent degree program usually requires the student to complete an additional year of study beyond the bachelor's degree in Mechanical Engineering or Mechanical Engineering Technology.

### Mechanical Engineering

**Degree Offered**

Bachelor of Science in Mechanical Engineering

**Program Mission Statement**

The Mechanical Engineering Program at Oregon Institute of Technology is an applied engineering program. Its mission is to provide graduates the skills and knowledge for successful careers in mechanical engineering.

**Primary Goals**

- Provide graduates the skills and knowledge necessary for immediate employment while also assuring abilities required for continued academic work.
- Enable students to be effective communicators, life-long learners, and ethical engineering professionals.
- Develop and maintain partnerships with public and private institutions to ensure a relevant, high quality program.

**Career Opportunities**

Mechanical Engineering is the broadest branch of engineering providing graduates the ability to pursue many varied career paths. It encompasses a wide variety of specialties including alternative energy, mechanical design, thermal/fluids/heat transfer, and mechatronics to name a few. Graduates will find a wide range of opportunities for employment in design, research and development, testing, manufacturing, government agencies, educational institutions, consulting and business. The Mechanical Engineering degree also prepares the students for further study in graduate school.

**Objectives of the Program**

The Mechanical Engineering Program at Oregon Institute of Technology provides an excellent theoretical and applied or “hands-on” engineering education. The program provides graduates with a foundation in fundamentals, applications, design, project management, communications, and professional and ethical responsibility.
The program offers coursework in all of the above areas beginning with mathematics, science, machining, welding, and computer aided design topics in the freshman year. Engineering science and physics courses are typically taken by the student in the sophomore year. Junior and senior curriculum is devoted to analysis, design, and testing aspects of mechanical engineering. Technical electives are available for students to pursue their particular fields of interest.

Throughout the four-year curriculum, emphasis is placed on oral and written communication skills, teamwork and cooperation, and hands-on laboratory and project work. Graduates are well-rounded engineers and readily accepted into industry or graduate programs.

**Student Preparation**

Students planning to enter the Mechanical Engineering curriculum should undertake mathematics-science training in high school. Such courses as algebra, trigonometry, calculus, physics, chemistry, drafting, CAD, writing, speech, and shop classes will prove beneficial.

**Cooperative Field Experience**

There is an opportunity for students in the bachelor of science degree program to work in industry for a specified time and receive college credit. Those interested in such an opportunity are encouraged to work out the details with the Mechanical Engineering Program Director. Mechanical Engineering students have the opportunity to participate in the state-wide MECOP internship program. For information, see the following Web site: http://mecop.orst.edu.

**Degree Requirements**

In the curriculum listings appear several courses titled “MECH elective.” MECH electives allow the student to select and pursue specific career objectives within the mechanical engineering field. MECH electives are upper-division MECH courses, not specifically required for graduation.

Students from other institutions should refer to the sections of this catalog titled “Transfer Students” and “Admission to Baccalaureate Programs.”

The Bachelor of Science in Mechanical Engineering requires 193 credit hours as prescribed in the following curriculum outline.

### Bachelor of Science in Mechanical Engineering

#### Curriculum

Required courses and recommended terms during which they should be taken:

<table>
<thead>
<tr>
<th>Freshman Year Fall</th>
<th>CHE 221</th>
<th>General Chemistry</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MET 111</td>
<td>Orientation I</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>WRI 121</td>
<td>English Composition</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Humanities/Social Science elective *</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>13</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Freshman Year Winter</th>
<th>CHE 222</th>
<th>General Chemistry</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MET 112</td>
<td>Orientation II</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>MFG 103</td>
<td>Introductory Welding Processes</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WRI 122</td>
<td>English Composition</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>13</td>
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</table>

<table>
<thead>
<tr>
<th>Freshman Year Spring</th>
<th>MATH 251</th>
<th>Differential Calculus</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>MFG 120</td>
<td>Manufacturing Processes I</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>MET 160</td>
<td>Materials I</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>MET 241</td>
<td>CAD for Mechanical Design I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>SPE 111</td>
<td>Fundamentals of Speech</td>
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<td>16</td>
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</table>

<table>
<thead>
<tr>
<th>Sophomore Year Fall</th>
<th>MATH 252</th>
<th>Integral Calculus</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>PHY 221</td>
<td>General Physics with Calculus</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>WRI 227</td>
<td>Technical Report Writing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Economics elective</td>
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</tr>
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<table>
<thead>
<tr>
<th>Sophomore Year Winter</th>
<th>ENGR 211</th>
<th>Statics</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>MATH 254N</td>
<td>Vector Calculus</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>MATH 361</td>
<td>Statistical Methods I</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>PHY 222</td>
<td>General Physics with Calculus</td>
<td>4</td>
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<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Sophomore Year Spring</th>
<th>ENGR 266</th>
<th>Computer Programming for Engineers</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>ENGR 213</td>
<td>Strength of Materials</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>ENGR 236</td>
<td>Fundamentals of Electrical Circuits</td>
<td>3</td>
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<tr>
<td></td>
<td>MATH 321</td>
<td>Applied Differential Equations I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PHY 223</td>
<td>General Physics with Calculus</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Junior Year Fall</th>
<th>MATH 253N</th>
<th>Sequences and Series</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>MFG 314</td>
<td>Geometric Dimensioning and Tolerancing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MECH 318</td>
<td>Fluid Mechanics I</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>MECH 363</td>
<td>Instrumentation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MET 375</td>
<td>Solid Modeling</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
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</tr>
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<table>
<thead>
<tr>
<th>Junior Year Winter</th>
<th>ENGR 212</th>
<th>Dynamics</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>ENGR 355</td>
<td>Thermodynamics</td>
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</tr>
<tr>
<td></td>
<td>MECH 315</td>
<td>Machine Design I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MECH 360</td>
<td>Materials I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MET 326</td>
<td>Electrical Power Systems</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>SPE 321</td>
<td>Small Group and Team Communication</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
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<table>
<thead>
<tr>
<th>Senior Year Fall</th>
<th>MECH 323</th>
<th>Heat Transfer</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>MECH 351</td>
<td>Finite Element Analysis</td>
<td>3</td>
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<tr>
<td></td>
<td>MECH 490</td>
<td>Senior Projects I</td>
<td>3</td>
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<tr>
<td></td>
<td>WRI 321</td>
<td>Advanced Technical Communication</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MECH elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Humanities/Social Science elective *</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>Senior Year Winter</th>
<th>MECH 417</th>
<th>Fluid Mechanics II</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MECH 436</td>
<td>Applied Control Systems</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MECH 437</td>
<td>Heat Transfer Laboratory</td>
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</tr>
<tr>
<td></td>
<td>MECH 491</td>
<td>Senior Projects II</td>
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</tr>
<tr>
<td></td>
<td>PHI 331</td>
<td>Ethics: Moral Issues in the Professions</td>
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</tr>
<tr>
<td></td>
<td>WRI 322</td>
<td>Advanced Technical Communications</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Humanities/Social Science elective *</td>
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<td><strong>Total</strong></td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>Senior Year Spring</th>
<th>IMGT 345</th>
<th>Engineering Economy</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>ENGR 485</td>
<td>Fundamentals of Engineering Exam</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>MECH 480</td>
<td>Vibrations</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MECH 492</td>
<td>Senior Projects III</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WRI 323</td>
<td>Advanced Technical Communication</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MECH elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Humanities/Social Science elective *</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>17</td>
</tr>
</tbody>
</table>

* In addition to HUM 125, PHI 331 and the Economics elective students must take 3 credits of Humanities and 9 credits of Social Science. Activity or performing based Humanities courses are not accepted.
Mechanical Engineering Technology

Degree Offered
Bachelor of Science in Mechanical Engineering Technology

Program Mission Statement
The Mechanical Engineering Technology Program at Oregon Institute of Technology is an applied engineering technology program. Its mission is to provide graduates the skills and knowledge for successful careers in mechanical engineering and manufacturing.

Primary Goals
The Mechanical Engineering Technology Program will:
- Prepare students with the applied engineering skills necessary to be successful in their chosen careers in industry, business and government.
- Enable students to be effective communicators and life-long learners by assisting them in the development of critical thinking and problem solving skills, and ethical awareness.
- Provide a flexible and accessible educational opportunity to a wide range of students.
- Develop partnerships with industry, business and government to ensure a quality program that meet their needs.

Career Opportunities
Mechanical Engineering Technology graduates find a wide range of opportunities for employment in design, research and development, testing, manufacturing, government agencies, educational institutions, consulting and business. The largest number of graduates are employed by manufacturing firms. There, the graduates may develop new products, improve existing products, modify existing products for easier manufacture, or develop equipment for use in the production process. The work done by Mechanical Engineering Technologists varies widely. Interfacing computers and machines is a rapidly growing area of employment. This involvement with robotics and automation is having an impact on most mechanical systems. New materials such as high strength ceramics and polymers, fiber reinforced plastics, and new bonding agents are growing in importance, and their applications will offer many interesting and fulfilling careers. Energy systems become increasingly important as energy costs rise. Aerospace firms employ many OIT graduates in design, testing, and manufacturing. Careers in such traditional areas as power plants, heating and cooling systems, gas and steam turbines, and automotive systems are within the domain for the Mechanical Engineering Technologist.

Objectives of the Program
Objectives of the Mechanical Engineering Technology Program are:
1. To ensure that graduates of this curriculum acquire competency in those theoretical, applied engineering, and practical subjects necessary to successful careers in their chosen field.
2. To maintain a departmental reputation for academic standards that will assure graduates a welcome by prospective employers.
3. To provide advice and counsel to all students in these curricula.

Degree Requirements
In the curriculum listings appear several courses titled “MET elective.” MET electives allow the student to select and pursue specific career objectives within the mechanical engineering technology field. MET electives are upper-division MET courses, not specifically required for graduation.

Students from other institutions should refer to the sections of this catalog titled “Transfer Students” and “Admission to Baccalaureate Programs.” The Bachelor of Science in Mechanical Engineering Technology requires 190 credit hours as prescribed in the following curriculum outline.

Bachelor of Science in Mechanical Engineering Technology
**Curriculum**

Required courses and recommended terms during which they should be taken:

### Freshman Year

**Fall**
- CHE 101/201 Chemistry 3
- CHE 104/204 Chemistry Laboratory 1
- MATH 111 College Algebra 4
- MET 111 Orientation I 2
- WRI 121 English Composition 3
- Psychology elective* 3
- **Total** 16

**Winter**
- MATH 112 Trigonometry 4
- MET 112 Orientation II 2
- MFG 103 Introductory Welding Processes 3
- WRI 122 English Composition 3
- Social Science elective 3
- **Total** 15

**Spring**
- MATH 251 Differential Calculus 4
- MET 120 Manufacturing Processes 4
- SPE 111 Fundamentals of Speech 3
- Economics elective 3
- Humanities elective 3
- **Total** 17

### Sophomore Year

**Fall**
- ENGR 211 Statics 3
- MATH 254N Vector Calculus I 3
- MET 242 CAD for Mechanical Design II 2
- MFG 112 Introduction to Manufacturing Processes 4
- PHY 202/222 General Physics 4
- **Total** 17

**Winter**
- ENGR 213 Strength of Materials 3
- MATH 361 Statistical Methods I 3
- MET 218 Fluid Mechanics 3
- PHY 203/223 General Physics 4
- **Total** 16

### Junior Year

**Fall**
- ENGR 212 Dynamics 3
- ENGR 355 Thermodynamics 3
- MET 315 Machine Design I 3
- MET 360 Materials II 3
- MET 363 Instrumentation 3
- **Total** 15

**Winter**
- ENGR 213 Strength of Materials 3
- ENGR 266 Computer Programming for Engineers 3
- MET 315 Machine Design I 3
- MET 360 Materials II 3
- MET 363 Instrumentation 3
- **Total** 15

### Senior Year

**Fall**
- ENGR 236 Fundamentals of Electric Circuits 3
- ENGR 266 Computer Programming for Engineers 3
- MET 315 Machine Design I 3
- MET 360 Materials II 3
- MET 363 Instrumentation 3
- **Total** 15

**Winter**
- ENGR 212 Dynamics 3
- ENGR 355 Thermodynamics 3
- MET 315 Machine Design I 3
- MET 360 Materials II 3
- MET 363 Instrumentation 3
- **Total** 15

**Spring**
- ENGR 236 Fundamentals of Electric Circuits 3
- ENGR 266 Computer Programming for Engineers 3
- MET 315 Machine Design I 3
- MET 360 Materials II 3
- MET 363 Instrumentation 3
- **Total** 15

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*PSY 201 Recommended

**Engineering Exam to be selected from:**
- ENGR 485 Fundamentals of Engineering
- MFG 428 Manufacturing Engineering Certification
Mathematics Department

Tim Thompson, Department Chair
Office: Owens Hall 136

Jim Ballard, Scheduling Coordinator

Professors: B. Cornelius, P. Francis, T. Thompson

Associate Professors: J. Fischer, G. Waterman

Assistant Professors: J. Ballard, T. Fogarty, C. Negoita, R. Paul

General Education
Courses offered by the Department of Mathematics are designed to satisfy the needs of majors and nonmajors interested in mathematics primarily as part of a broad technical education. A major emphasis is on development of skills required to solve applied problems.

Success in mathematics requires that entering students begin their study in the course which best matches their ability and background. Accordingly, all entering students must pass a placement examination at the appropriate level before being allowed to register for their initial mathematics course.

Degree Offered
Bachelor of Science in Applied Mathematics

Minor Offered
Applied Mathematics

Program Objectives
Coursework for the bachelor's degree is intended to provide a solid foundation of mathematical theory and a broad selection of applied work both in and outside mathematics. The prospective major will complete coursework in calculus, differential equations, and numerical methods. Students also take a sequence of introductory physics courses and a further sequence in a technical field outside mathematics.

Career Opportunities
Upon completing the requirements for the Applied Mathematics degree students will be prepared for a variety of jobs in industry including numerical modelling, signal processing, data analysis, and many others. The degree also provides students a sufficient background to further their education by entering a Masters or Ph.D. program in Mathematics or Applied Mathematics.

Student Preparation
Students entering the Applied Mathematics Program from high school should have a minimum of two years of algebra, one year of precalculus, one year of geometry, and two years of physical science (physics or chemistry preferred). Additional courses in mathematics, science, English and computer programming will be very helpful. Students entering the Applied Mathematics Program by transfer are requested to contact the Mathematics Department concerning transfer of technical course work.

Degree Requirements
In addition to the mathematics requirements listed below, students will be required to complete the 200 level calculus-based general physics sequence as well as other general education requirements and electives necessary to bring the total credit hours to 180. Please see the recommended curriculum map below.

All mathematics courses must be completed with a grade “C” or better. Transfer students should consult the Admissions Office and the Mathematics Department to determine which of their courses will satisfy OIT course requirements.

Lower-Division Required Courses
(22 credits)
MATH 221 Introduction to Computational Software
MATH 251 - MATH 255 Calculus Sequence

Upper-Division Core Requirements
(34 credits)
MATH 327 Discrete Mathematics
MATH 321-322 Applied Differential Equations I, II
MATH 341 Linear Algebra I
MATH 361 Statistical Methods I
MATH 421 Applied Partial Differential Equations I
MATH 451 Numerical Methods I

Notes:
1. Some of the above courses have an additional lab requirement.
2. Physics 221, 222, 223 may not be used as focused electives.

Upper-Division Math/Physics Electives
(9-12 credits)
Students will choose 3 upper-level mathematics or physics courses with the approval of a mathematics adviser. No more than 6 credits can be MATH 407.

Focused Electives (17 credits)
Students will choose appropriate electives from outside of mathematics. These courses should support the program objectives, and must be approved by a mathematics adviser. The focused electives must total at least 17 credits at least 9 of which are from a 3 course sequence, see below for examples.

Examples of Focused Electives Sequences
• CST 126, 213, 223 Programming Languages
• CHE 221, 222, 223 General Chemistry
• ENGR 211, 212, 213 Statics, Dynamics, Strength of Materials
• PHY 311, 312, 313 Introduction to Modern Physics

Electives
• CST 313 Computer Software Techniques
• CHE 331, 332, 333 Organic Chemistry
• EET 371 Laplace Transforms and Applications
• ENGR 231 Fluid Dynamics
• ENGR 236 Fundamentals of Electric Circuits
• PSY 361 Industrial Psychology
• RDSC 356 Magnetic Resonance

Notes:
1. Some of the above courses have an additional lab requirement.
2. Physics 221, 222, 223 may not be used as focused electives.
# Bachelor of Science in Applied Mathematics

## Curriculum

Required courses and recommended terms during which they should be taken:

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<thead>
<tr>
<th>Freshman Year</th>
<th>Fall</th>
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<tr>
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<tr>
<td>SPE 111</td>
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<tr>
<td>WRI 121</td>
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</tr>
<tr>
<td>Elective</td>
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</table>

**Senior Year - Fall**

- MATH 421: Applied Partial Differential Equations I 4 credits
- Total: 15 credits

**Sophomore Year - Winter**

- MATH 252: Integral Calculus 4 credits
- MATH 221: Introduction to Computational Software 2 credits
- PHY 221: General Physics with Calculus 4 credits
- WRI 122: English Composition 3 credits
- Social Science elective 3 credits
- Total: 16 credits

**Sophomore Year - Spring**

- MATH 254N: Vector Calculus I 4 credits
- PHY 222: General Physics with Calculus 3 credits
- Social Science elective 3 credits
- Total: 14 credits

**Junior Year - Fall**

- MATH 321: Applied Differential Equations I 4 credits
- SPE 321: Small Group and Team Communication 3 credits
- Focused elective 3 credits
- Elective (upper-division) 3 credits
- Total: 12 credits

**Junior Year - Winter**

- MATH 322: Applied Differential Equations II 4 credits
- WRI 327: Technical Report Writing 3 credits
- Focused elective 3 credits
- Electives 6 credits
- Total: 16 credits

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**Upper-Division Electives:**

- MATH 311: Introduction to Real Analysis
- MATH 321: Applied Differential Equations I
- MATH 322: Applied Differential Equations II
- MATH 327: Discrete Mathematics
- MATH 342: Linear Algebra II
- MATH 362: Statistical Methods II
- MATH 421: Applied Partial Differential Equations I
- MATH 422: Applied Partial Differential Equations II
- MATH 423: Applied Partial Differential Equations III
- MATH 425: Vector Analysis
- MATH 451: Numerical Methods I
- MATH 452: Numerical Methods II
- MATH 453: Numerical Methods III
- MATH 465: Mathematical Statistics

Note: Not all courses are offered every term or every year.

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**Applied Mathematics Minor**

The minor in Applied Mathematics provides formal recognition of mathematical proficiency. It is composed of a core of required courses and upper-division electives related to the student's major. The minor consists of 29 credits, 19 from required courses and 10 from elective courses.

This minor is open to all majors and is especially recommended for students with an interest in pursuing a career related to mathematics. It will enhance their employability and improve graduate school possibilities.
Medical Imaging Technology Department

LeAnn Maupin, Department Chair
Office: DOW, 250

Jenny Kellstrom, Radiologic Science Program Director and Clinical Coordinator
Cheryl Zelinsky, Diagnostic Medical Sonography Program Director
LeAnn Maupin, Vascular Technology Program Director
Janette Isaacson, Vascular Technology and Echocardiography Degree Completion Program Director
Chris Caster, Vascular Technology Clinical Coordinator, Assessment Coordinator
Richard Hoylman, Nuclear Medicine Technology Program Director and Clinical Coordinator
Robyn Cole, Diagnostic Medical Sonography Clinical Coordinator
Debbie Caldwell, Medical Imaging Advising Coordinator

Professor: S. Schultz, G. Zimmerman
Associate Professors: D. Caldwell, J. Kellstrom, T. McVay, L. Maupin, C. Zelinsky
Assistant Professors: J. Broker, C. Caster, R. Cole, R. Hoylman
Instructors: R. Carson, T. Graham, D. McDonnell, S. Templeton

Participating Faculty: J. Isaacson (Distance Education)

Degrees Offered
Bachelor of Science in Diagnostic Medical Sonography
Bachelor of Science in Echocardiography
Bachelor of Science in Nuclear Medicine Technology
Bachelor of Science in Radiologic Science
Bachelor of Science in Vascular Technology

Specialization Offered
The Picture Archiving and Communication Systems (PACS) specialization is being revised. Please consult department for appropriate courses.

Department Objectives
The objectives of the Medical Imaging Technology Department are:
1. To prepare students to become effective participants in the medical imaging professions.
2. To provide the residents of Oregon and the Pacific Northwest with Bachelor of Science degrees in Medical Imaging Technology.
3. To prepare students for professions that require critical-thinking and problem-solving skills.
4. To instill an effective influence of professional character, the knowledge and experience to pass the National Registry exams.
5. To instill lifelong learning.

Accreditation
Oregon Institute of Technology is accredited by Northwest Commission on Colleges and Universities, 8060 165th Ave. NE, Suite 100, Redmond, WA 98052-3981, an institutional accrediting body recognized by the Council for Higher Education Accreditation and/or the Secretary of the U.S. Department of Education.

Program Descriptions
The Department of Medical Imaging Technology offers bachelor's degrees in five professional programs, which encompass the spectrum of imaging sciences.

The curriculum of each bachelor's degree program provides the technical, scientific, and communication skills essential for the application of learned concepts. Each program prepares students for immediate employment, and for successfully passing the national and state registry examinations in each field.

Diagnostic Medical Sonography: (also called sonography, ultrasound, or general ultrasound). Sonography uses high frequency sound wave imaging and Doppler instrumentation to aid in the diagnosis of pathology and disease processes. The sonographer gathers pertinent patient history, creates images, and submits preliminary findings to the reading physician. Common exams include: obstetric, gynecological, peritoneal, retroperitoneal, pelvic, thoracic, musculoskeletal, extremity, neurological, and superficial procedures. Invasive applications are also performed in most clinical settings.

Echocardiography: Echocardiography is a safe method of obtaining ultrasound images for diagnosis of cardiac pathology in adult and pediatric patient populations. Echocardiographers conduct patient interviews, compile health histories and determine risk assessments pertaining to cardiovascular disease. The echocardiographer reports pertinent findings to the physician as part of the diagnostic process.

Nuclear Medicine Technology: Nuclear medicine is an imaging science that demonstrates pathology through physiologic processes, as opposed to detailed anatomic images. This branch of imaging science has been in existence for over four decades, and provides unique diagnostic information obtained by the patient's ingestion, inhalation, or being injected with a radioactive isotope.

Radiologic Science: This program has been in existence at OIT for more than 50 years. The training prepares the future radiologic technologist with a wide variety of skills, including radiography, fluoroscopy, mobile and surgical radiography, Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Mammmography, Cardiovascular Interventional Technology (CIT), Quality Assurance, and imaging department management.
Vascular Technology: Vascular technology is a profession which utilizes ultrasound, Doppler, color Doppler and various physiologic testing procedures to aid in the diagnosis of disease of the vascular system. Vascular technologists conduct patient interviews, compile health histories and determine risk assessments pertaining to vascular disease. The technologists choose appropriate testing modalities and provide referring physicians with preliminary interpretation of results.

Facilities
OIT’s state-of-the-art imaging equipment allows medical imaging students to become familiar with a wide variety of imaging procedures like those performed in most medical centers. Students may also spend significant time at Sky Lakes Medical Center where they will gain experience directly with patients, prior to externship. This experience plus the academic coursework prepares the student well for the medical imaging professions.

Exterionships
All five of the bachelor’s degree programs in medical imaging culminate in a senior year of clinical externship at a medical center. The 11-month externship is spent at the affiliate institution under the supervision of a clinical instructor. Students do not have classes on the OIT campus during this year.

All imaging students must have a current American Heart CPR card during the entire extern year. The imaging department will provide an opportunity for the student to receive this certification during the junior year. There is an additional fee for this certification.

The location of externship will be determined by a lottery conducted by medical imaging faculty.

All students will be guaranteed an externship subject to the following:
1. All academic requirements must be met before externship assignments will be made.
2. Students will be required to pass a drug test prior to acceptance by the externship site.
3. Students must complete a request for criminal history which is required by many of the sites for persons providing care to children or the developmentally disabled.
4. Students will be required to carry group health insurance coverage during the entire externship year.

Admission Requirements

Pre-Medical Imaging Technology Freshman Year
Enrollment is open to all students who meet the general entry requirements to the university. Students will be listed as Pre-Medical Imaging Technology (Pre-MIT) students. Admittance to the OIT Pre-MIT Program does not mean the student has been accepted into a specific MIT program.

Program Selection Criteria
Students must complete all the courses, including general education, in the specified freshman year (pre-medical imaging) curriculum. Selection will be made at the end of the Spring term of the pre-medical imaging technology year. The number of students selected each year will be determined by the number of qualified applicants, and by the availability of clinical sites. Therefore, the number of qualified applicants may exceed the number of spaces available. Prior acceptance does not guarantee future acceptance into any MIT Program. Students must reapply yearly.

Selection will be based upon the following criteria and point system:
1. **GPA:** Students must have a total of a 3.0 weighted GPA or above in the following courses (or equivalent transfer courses) to apply to one of the five MIT Programs.
   - BIO 200 Medical Terminology 2
   - BIO 231 Human Anatomy and Physiology I 4
   - BIO 232 Human Anatomy and Physiology II 4
   - BIO 233 Human Anatomy and Physiology III 4
   - CHE 101 Elementary Chemistry 3
   - CHE 104 Elementary Chemistry 1
   - MATH 112 Trigonometry 4
   - MIT 103 Introduction to Medical Imaging 3

   GPA points are calculated as GPA x 10. (For example, a 3.5 GPA x 10 = 35).

2. All applicants must attend an OIT hosted selection event on a specific date during spring term. Several activities are conducted during this event to allow students to demonstrate communication skills, team skills, writing skills, problem solving skills and professionalism. Faculty from the MIT Department, industry leaders and other OIT department members are present at the selection event to evaluate those skills.

Application Requirements
Applications are available through MIT 103 Introduction to Medical Imaging.

A copy of transcripts (unofficial) must be attached to the application. Incomplete applications will not be accepted. There are no refunds of the application fee. Repeat applicants must follow the same procedures as first-time applicants. Contact the selection chairman for a new application.

The application form allows ranking of programs by choice (first and second) and only one application per student will be accepted. If multiple applications are received, they will be returned along with the application fees.

For current selection information refer to the OIT Medical Imaging Technology (MIT) Web site at www.oit.edu/mit.

Transfer Students
Transfer students who meet the academic requirements of the pre-medical imaging technology year will not find a course at another college which substitutes for MIT 103 Introduction to Medical Imaging. This course may be taken as a distance learning course. It must be completed in the Summer, Fall, Winter or Spring term prior to the application to a professional program. The MIT application form is included in the MIT 103 course. Transfer students must apply to both OIT and MIT using two separate application processes. For more information on this distance course, contact Diana Evans at (541) 885-1676.
Degree Completion Programs
The Radiologic Science, Vascular Technology, and Echocardiography Programs offer degree completion programs for registered technologists (in good standing) who lack a bachelor’s degree. These programs are offered externally, utilizing mail, e-mail, fax, and the Internet for course delivery. There is no requirement for coming to campus.

For more information on the degree completion programs, contact Diana Evans at (541) 885-1676, or visit the Distance Education home page at www.oit.edu/dist.

Graduation Requirements
All credits listed in the curriculum for the catalog year a student begins a program must be fulfilled. Total credits required for graduation are: Diagnostic Medical Sonography 197, Echocardiography 198, Nuclear Medicine Technology 195, Radiologic Science 201 and Vascular Technology 199.

Students must maintain a 2.00 GPA to be eligible for graduation. In addition, a final grade of “C” or better must be earned in all professional courses (DMS, ECHO, NMT, RDSC, VT), communication courses, and science/mathematics courses to continue in the program. All curricular requirements must be met within five academic years once the student is admitted into a professional program as a sophomore.

When a student unsuccessfully attempts an imaging course, progress in the professional curriculum is curtailed until that course is successfully completed the following year, pending reinstatement. However, if the student has an unsuccessful attempt fall term, sophomore year, they must reapply to the program. If the student has an unsuccessful attempt after fall term sophomore year the student must submit a letter of intent to the program director of the specific program they seek to re-enter. The letter must be submitted at least one term prior to readmittance.

When students attempt unsuccessfully a second time the same or a different imaging course, they are terminated from that program. Additionally, if a student receives a “D,” “F” or “W” in two or more imaging courses in one term, they will be dismissed from that program.

Students may apply for admittance to a second imaging program under the same application criteria as all other applicants. After two unsuccessful attempts to complete two different programs, students may not apply for a third program.

Career Opportunities
There continues to be a high demand for bachelor’s degree prepared medical imaging professionals. Graduates have excellent opportunities for employment in hospitals, clinics, private practice, state and federal agencies, and with appropriate experience, in supervision, education and industry.

Bachelor of Science in Diagnostic Medical Sonography
Curriculum
Required courses and recommended terms during which they should be taken:

Pre-Medical Imaging Technology
Freshman Year  Fall
BIO 231 Human Anatomy and Physiology I  4
CHE 101 Elementary Chemistry  3
CHE 104 Elementary Chemistry Laboratory  1
MATH 111 College Algebra  4
MIT 103 Introduction to Medical Imaging  3
Total  15

Freshman Year  Winter
BIO 232 Human Anatomy and Physiology II  4
MATH 112 Trigonometry  4
WRI 121 English Composition  3
Humanities elective  3
Social Science elective  3
Total  17

Freshman Year  Spring
BIO 200 Medical Terminology  2
BIO 233 Human Anatomy and Physiology III  4
PSY 352 General Psychology (PSY 201, PSY 202 or PSY 203)  3
SPE 111 Fundamentals of Speech  3
WRI 122 English Composition  3
Total  15

Sophomore Year  Fall
BIO 335 Cross-Sectional Anatomy  3
DMS 205 Applications of Abdominal Sonography  3
DMS 231 Sonographic Physics and Instrumentation I  3
DMS 252 Sophomore Laboratory I  1
PHY 201 General Physics  4
Total  14

Sophomore Year  Winter
DMS 224 Sonographic Abdominal Scanning I  3
DMS 232 Sonographic Physics and Instrumentation II  3
DMS 253 Sophomore Laboratory II  1
WRI 227 Technical Report Writing  3
Humanities elective  3
Social Science elective  3
Total  16

Sophomore Year  Spring
DMS 225 Sonographic Abdominal Scanning II  3
DMS 254 Sophomore Laboratory III  1
DMS 255 Sonographic Film Analysis  3
Business elective  3
Humanities elective  3
Social Science elective  3
Total  16

Junior Year  Fall
BUS 317 Health Care Management  3
DMS 333 Pelvic Sonography  3
DMS 335 Diagnostic Medical Sonography Patient Care  3
DMS 352 Junior Laboratory I  1
SPE 321 Small Group and Team Communication  3
Communication elective*  3
Total  16

Junior Year  Winter
BUS 316 Total Quality in Health Care  3
DMS 316 Survey of Vascular Technology  3
DMS 334 Obstetrical Sonography I  3
DMS 337 Breast Sonography  3
DMS 353 Junior Laboratory II  1
Math/Science/Social Science elective  3
Total  16

Junior Year  Spring
DMS 343 Fetal Echo and Neonatal Sonography  3
DMS 344 Obstetrical Sonography II  3
DMS 354 Junior Laboratory III  1
DMS 365 Sonographic Pathology  3
DMS 388 Extern Preparation  2
Total  12

Senior Year  Summer
DMS 430 Diagnostic Medical Sonography Externship  15
Total  15

Senior Year  Fall
DMS 430 Diagnostic Medical Sonography Externship  15
Total  15
Bachelor of Science in Echocardiography

Curriculum

Required Courses and recommended terms during which they should be taken:

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<td>CHE 250 Clinical Pharmacology for Nuclear Medicine</td>
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<td>NMT 212 Nuclear Medicine Physics/Radiation Biophysics</td>
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<tr>
<td>CHEM 210 Clinical Pharmacology</td>
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<td>ECHO 376 Survey of Vascular Technology</td>
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<td>ECHO 325 Pediatric Echocardiography</td>
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<td>Bus 317 Health Care Management</td>
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<td>CHE 101 Human Anatomy and Physiology I</td>
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<td>MATH 111 College Algebra</td>
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### Bachelor of Science in Radiologic Science

**Curriculum**

Required courses and recommended terms during which they should be taken:

#### Pre-Medical Imaging Technology

**Freshman Year**

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<tr>
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<th>Course Title</th>
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**Junior Year**

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<td>BIO 232</td>
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<td>RDSC 320</td>
<td>Radiographic Positioning IV</td>
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<td>WRI 227</td>
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<td>Externship Preparation</td>
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**Senior Year**

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<tbody>
<tr>
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#### Professional Courses

**Sophomore Year**

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<td>RDSC 205</td>
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<tbody>
<tr>
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**Bachelor of Science in Vascular Technology**

**Curriculum**

Required courses and recommended terms during which they should be taken:

#### Pre-Medical Imaging Technology

**Freshman Year**

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<tr>
<td>BIO 220</td>
<td>Medical Terminology</td>
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<td>BIO 233</td>
<td>Human Anatomy and Physiology III</td>
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<td>PSY 201</td>
<td>General Psychology (PSY 201, PSY 202 or PSY 203)</td>
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<td>Fundamentals of Speech</td>
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#### Professional Courses

**Sophomore Year**

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<td>RDSC 201</td>
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<td>RDSC 325</td>
<td>Equipment Operation and Maintenance</td>
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<td>Cross-Sectional Anatomy</td>
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<td>VAS 214</td>
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<td>Medical Terminology</td>
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<td>VAS 210</td>
<td>Vascular Physical Principles and Instrumentation</td>
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<td>VAS 245</td>
<td>Peripheral Venous Disease</td>
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<td>VAS 335</td>
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**Senior Year**

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Sophomore Year  Spring  
BIO 347  Pathophysiology II*  3  
VAS 211  Vascular Physical Principles and Instrumentation II*  4  
VAS 225  Patient Management Practices*  3  
VAS 246  Peripheral Arterial Disease*  4  
Social Science elective  3  
Total  17  

Junior Year  Fall  
BUS 317  Health Care Management  3  
SPE 321  Small Group and Team Communication  3  
VAS 337  Survey of Echocardiography*  3  
VAS 365  Abdominal Vascular Disease*  4  
Social Science elective  3  
Total  16  

Junior Year  Winter  
BUS 316  Total Quality in Health Care  3  
CHE 210  Clinical Pharmacology*  3  
VAS 366  Special Circulatory Problems*  4  
VAS 375  Survey of Abdominal Sonography*  3  
Humanities elective  3  
Total  16  

Junior Year  Spring  
VAS 367  Cerebrovascular Disease*  4  
VAS 385  Vascular Laboratory Management*  3  
VAS 388  Externship Preparation  2  
Communication elective**  3  
Humanities elective  3  
Total  15  

Senior Year  Summer  
VAS 420  Vascular Technology Externship*  15  
Total  15  

Senior Year  Fall  
VAS 420  Vascular Technology Externship*  15  
Total  15  

**  As offered under Communication requirements in the General Catalog.

Picture Archiving and Communication Systems (PACS) Specialization

Medical Imaging Technology students with an interest and aptitude in computer science have a unique opportunity at OIT. Networked digital imaging has created the need for technologists with specialized training. Career opportunities for managers of image networks are on the rise, but few working technologists have the training to prepare them for entering this field.

With the availability of Computer Systems and Management Information Systems majors at OIT, a specialization in Picture Archiving and Communication Systems (PACS) is available for motivated students to pursue this opportunity.
Military Science

Office: Owens Hall, 216F

Professor: Major Travis Lee
Instructors: Captain Michael Whalen, First Lieutenant Matt Cofer, and Sergeant First Class Lee Blank

Recruiting/Retention Sergeant: Major Kirk Mickelsen

The 186th Guard Officer Leadership Detachment (GOLD) is a regular instructional division of the university. The Military Science Department offers four years of upper and lower division military science courses to all students who meet course prerequisites. The courses are fully accredited and applicable as electives for fulfilling baccalaureate degree requirements. Successful completion of the GOLD Program leads to commissioning as a federally recognized, Second Lieutenant in the Oregon Army National Guard. The course is broken into two phases, a Basic Course and an Advanced Course. Participation in both phases is voluntary and requires no military commitment.

Basic Course/Introduction Phase
The Basic Course is composed of 100 and 200-level lower-division courses. It is usually taken during the freshman and sophomore years and is open to any student enrolled at OIT. Instruction is oriented toward outdoor training and classroom activities that give students insight into military service, basic soldier skills, and leadership.

Advanced Course/Pre-commissioning Phase
The Advanced Course is a two year pre-commissioning phase integrating classroom instruction, military training, and practical experience to progressively develop leadership skills, qualities, and character. Following the sophomore and junior years, students who are Army National Guardsmen and have formally enrolled in the GOLD Program attend two intensive two week training exercises. Upon successful completion of the second two week training exercise, students graduate from the program and are eligible to receive a commission as Second Lieutenants. Although participation in the Basic Course is not a prerequisite for the Advanced Course, it is strongly encouraged.

Eligibility
All students are eligible to attend and participate in any Military Science (MSC) classes. In order to be formally accepted into the GOLD Program students must be:

- Between 18 and 35 years old.
- A U.S. citizen or willing to apply.
- A member of the Army National Guard.
- In good health and able to meet military entry requirements.
- Of good moral character and behavior.

Educational Benefits
Several educational benefits are available to students once they are formal program members and Army National Guardsmen. These include Federal Tuition assistance, the Montgomery GI Bill, and a $350 per month Commissioning Kicker (stipend) in addition to their monthly pay check from the Army National Guard. Interested students should contact either the Military Science Department or simply call Major Travis Lee at (541) 552-6309.

Commissioning
In addition to the GOLD Program requirements, students must meet all guidelines for a baccalaureate degree if they are seeking a commission. These requirements are outlined in the Baccalaureate Degree Requirements section of the course catalog and include the completion of general education and academic major requirements. When the Advanced Course is successfully completed and students receive their baccalaureate degree, they are commissioned as Second Lieutenants in the Oregon Army National Guard.
Natural Sciences Department

Tanya McVay, Department Chair
Office: DOW, 224


Associate Professors: B. Clark, H.-Y. Li, T. McVay, M. O’Shaughnessy, K. Sale, R. Torres, K. Usher

Assistant Professors: A. Amoia, R. Wilde, C. Wittmer

Instructor: R. McClure

Degrees Offered
Bachelor of Science in Biology
Biological Sciences Emphasis
Pre-Medical Professions Emphasis
Bachelor of Science in Environmental Sciences
Bachelor of Science in Health Sciences

The Department of Natural Sciences prepares students for challenging, rewarding careers in health, biological, and environmental sciences. The department also provides courses in biology, chemistry, and physics in support of degrees in nursing, health sciences, management programs, and engineering.

Biology Program

Burton Clark, Program Director for Biology—Pre-Medical Professions Emphasis
Office: DOW, 220

Lawrence Powers, Program Director for Biology—Biological Sciences Emphasis
Office: DOW, 210


Degree Offered
Bachelor of Science in Biology

Objective and Career Opportunities

The Bachelor of Science in Biology provides students with several program alternatives to meet their career objectives. The courses of study are designed to prepare students for entry into the health sciences, environmental sciences, and graduate careers in biological sciences and biology education.

A biological sciences curriculum emphasizes field and laboratory training in ecology, evolution, and the biology of organisms. It is designed for students wishing to apply to graduate programs in biology, those seeking careers in the applied biological sciences, and those wishing to pursue graduate teaching credentials with a specialty in biology.

A pre-medical professions curriculum is designed for students wishing to apply to graduate and professional schools in medicine, dentistry, osteopathy, veterinary medicine, physical therapy, occupational therapy, optometry, pharmacy, podiatry, clinical laboratory sciences, and other programs requiring rigorous coursework in the sciences and mathematics.

Considerable flexibility in major electives is granted toward the degree. Students, in consultation with their advisers, may select courses from either curriculum or from courses in other departments that satisfy the degree requirements.

Degree Requirements

The minimum graduation requirement for OIT is 180 credit hours (term hours). A minimum of 60 credits must be in upper-division (300- and 400-numbered) courses. These requirements include those for general education (stated elsewhere in this catalog) and the prescribed courses required for every student completing a Bachelor of Science in Biology degree. Prescribed courses differ for students in the premedical professional and the biological sciences curriculum. Note also that these curricula differ slightly from the curriculum offered for the Bachelor of Science degree in Environmental Sciences. Please consult program officials for advising.

Biology students must complete every science course with a minimum grade of “C” and must maintain a minimum grade point average of 2.5 in lower division science courses to advance to upper-division science courses in the major.

Reference

Please view individual course descriptions under the following prefixes: BIO, CHE, ENV, GIS, and HSC. The Environmental Science degree and Health Sciences degree also offer curricula maps under their respective entries.

Bachelor of Science in Biology—Biological Sciences Emphasis

Curriculum

Required courses and recommended terms during which they should be taken:

Freshman Year Fall
BIO 211 Principles of Biology 4
MATH 111 College Algebra 4
WRI 121 English Composition 3
Social Science elective 3
Total 14

Freshman Year Winter
BIO 212 Principles of Biology 4
GEOG 105 Physical Geography: Geomorphology 3
MATH 112 Trigonometry 4
WRI 122 English Composition 3
Total 15

Freshman Year Spring
BIO 213 Principles of Biology 4
MATH 361 Statistical Methods I ** 4
SPE 111 Fundamentals of Speech 3
WRI 227 Technical Report Writing 3
Total 14

Sophomore Year Fall
BIO 345 Medical Microbiology 5
CHE 221 General Chemistry 5
MATH 251 Differential Calculus 4
Social Science elective 3
Total 17

Sophomore Year Winter
CHE 222 General Chemistry 5
MATH 252 Integral Calculus 4
SPE 321 Small Group and Team Communication 3
Humanities elective 3
Total 15
Sophomore Year  
Spring  
BIO 313 Botany 4  
CHE 223 General Chemistry 5  
WRI 327 Advanced Technical Writing 3  
Humanities elective 3  
Total 15  

Junior Year  
Fall  
BIO 426 Evolutionary Biology 3  
CHE 331 Organic Chemistry I 4  
PHY 221 General Physics with Calculus * 4  
Humanities elective 3  
Elective 3  
Total 17  

Junior Year  
Winter  
ANTH 101 Introduction to Physical Anthropology § 3  
CHE 332 Organic Chemistry II 4  
PHY 222 General Physics with Calculus * 4  
Elective 3  
Total 14  

Senior Year  
Fall  
BIO 331 Human Anatomy and Physiology I ‡ 5  
CHE 450 Biochemistry I 4  
Elective 3  
Total 15  

Senior Year  
Winter  
BIO 332 Human Anatomy and Physiology II ‡ 5  
CHE 451 Biochemistry II 4  
Social Science elective 3  
Elective 3  
Total 15  

Senior Year  
Spring  
BIO 333 Human Anatomy and Physiology III ‡ 5  
Elective 4  
Elective 3  
Elective 3  
Total 15  

* PHY 221, PHY 222, and PHY 223 may be substituted with PHY 201, PHY 202, and PHY 203 with adviser consent  
** MATH 361 may be substituted with MATH 243 with adviser consent  
‡ Other social science course may be substituted for ANTH 101 with adviser consent  
§ Offered in alternating years  
◊ BIO 331, BIO 332, and BIO 333 may be substituted with BIO 231, BIO 232, and BIO 233 with adviser consent. Three additional major credits must be added. 
• Either BIO 337 or BIO 428 is required for admission to Southern Oregon University’s MAT Program. 

When choosing major electives or substituting courses, students are responsible for completing a minimum of 60 credits of upper-division work before a degree will be awarded. Upper-division work is defined as 300 and 400 level classes at a bachelor's degree granting institution. 

Bachelor of Science in Biology—Pre-Medical Professions Emphasis 

Curriculum 

Required courses and recommended terms during which they should be taken: 

Freshman Year  
Fall  
BIO 211 Principles of Biology 4  
MATH 111 College Algebra 4  
WRI 121 English Composition 3  
Social Science elective 3  
Total 14  

Freshman Year  
Winter  
BIO 212 Principles of Biology 4  
HSC 115 Introduction to the Medical Sciences I 2  
MATH 112 Trigonometry 4  
WRI 122 English Composition 3  
Social Science elective 3  
Total 16  

Freshman Year  
Spring  
BIO 200 Medical Terminology 2  
BIO 213 Principles of Biology 4  
MATH 361 Statistical Methods I ** 4  
Humanities elective 3  
Total 13  

Sophomore Year  
Fall  
BIO 345 Medical Microbiology 5  
CHE 221 General Chemistry 5  
MATH 251 Differential Calculus 4  
SPE 311 Fundamentals of Speech 3  
Total 17  

Sophomore Year  
Winter  
BIO 209 Current Research Topics in Medical Sciences I 1  
BIO 341 Medical Genetics 3  
CHE 222 General Chemistry 5  
MATH 252 Integral Calculus 4  
SPE 321 Small Group and Team Communication 3  
Total 16  

Sophomore Year  
Spring  
CHE 223 General Chemistry 5  
WRI 227 Technical Report Writing 3  
Humanities elective 3  
Elective 3  
Total 14  

Junior Year  
Fall  
BIO 331 Human Anatomy and Physiology I 5  
CHE 331 Organic Chemistry I 4  
PHY 221 General Physics with Calculus * 4  
Total 13  

Junior Year  
Winter  
BIO 332 Human Anatomy and Physiology II 5  
CHE 332 Organic Chemistry II 4  
PHY 222 General Physics with Calculus * 4  
Humanities elective 3  
Total 16
Environmental Sciences Program

Carrie Wittmer, Program Director
Office: DOW, 205


Degree Offered
Bachelor of Science in Environmental Sciences

The Bachelor of Science degree in Environmental Sciences is a degree in science methodology and applied analysis, focusing on applying state-of-the-art field methods, instrumentation and data analysis to the study of environmental problems. Two technical emphasis areas are available: Watershed Sciences and Geographic Information Science (GIS). The program builds on three cores: an environmental core of six lower-division courses, a basic sciences core consisting of nine courses (one year each of biology, chemistry and physics), and a mathematics core of five courses, including differential and integral calculus and statistics. The program is interdisciplinary in nature and utilizes practical skills and knowledge of faculty from a broad range of backgrounds and experience.

Students may choose to concentrate in one of the technical emphasis areas or, under the direction of an adviser, students may blend offerings from the two areas to create a more individually focused curriculum. Courses from other departments including Civil Engineering, Mathematics, Chemistry, Health Sciences, Computers, or Communication Studies may be substituted for technical emphasis courses upon approval of your adviser.

Objectives
The objectives of the Environmental Sciences Program are:
1. To provide students with knowledge and training in the practical application of the scientific method utilizing analytical approaches and instrumentation-based methodologies.
2. To prepare students for roles that require critical-thinking and problem-solving skills.
3. To present complex environmental problems from a systems perspective that features diverse data acquisition and manipulation techniques.
4. To allow students to develop team-based problem solving skills by encouraging collaboration, promoting diversity of approaches, and utilizing projects and task-based exercises and assignments.

Student Preparation
The Environmental Sciences curriculum is a demanding instructional program requiring the development and use of quantitative skills. Prospective students for this program are advised to complete two to three years of high school mathematics and science (biology, chemistry, and physics). Students should also be familiar with computer applications. Students transferring from other science or technical programs, including environmental programs at other institutions, are requested to contact the program director for information on program requirements.

Career Opportunities
The Environmental Sciences Program produces graduates who are highly skilled in the methodology and practice of environmental assessment. Students learn to design, implement and interpret the results of scientific studies used to address specific environmental issues and problems. Graduates can expect to find employment in consulting firms, government agencies (regulatory and research), educational institutions and many types of service and industrial firms. Students are also prepared to enter many graduate school programs.

Environmental Science students have been actively recruited by major employers including: U.S. Bureau of Reclamation, Bureau of Land Management, U.S. Fish and Wildlife Service, Oregon State Police Wildlife Enforcement, Klamath County Health Department, Klamath Irrigation District, U.S. Geological Survey, the Nature

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Spring</th>
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<tbody>
<tr>
<td>BIO 333 Human Anatomy and Physiology III</td>
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<tr>
<td>CHE 333 Organic Chemistry III</td>
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<tr>
<td>PHY 223 General Physics with Calculus *</td>
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<tr>
<td>WRI 327 Advanced Technical Writing</td>
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<td><strong>Total</strong></td>
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<tr>
<td>BIO 426 Evolutionary Biology</td>
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<tr>
<td>CHE 450 Biochemistry I</td>
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<td>BIO 346 Pathophysiology I</td>
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<td>BIO 409 Current Research Topics in Medical Sciences II</td>
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<td>CHE 451 Biochemistry II</td>
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<tr>
<td>BIO 347 Pathophysiology II</td>
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<tr>
<td>BIO 436 Immunology</td>
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<tr>
<td>CHE 452 Biochemistry III</td>
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<td>Elective</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
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</tbody>
</table>

General and Major Elective Choices:
- BIO 205 Nutrition | 3 |
- BIO 342 Cell Biology | 4 |
- BUS 215 Principles of Management | 3 |
- BUS 306 Principles of Marketing | 3 |
- BUS 314 Entrepreneurship | 3 |
- BUS 316 Total Quality in Health Care | 3 |
- BUS 317 Health Care Management | 3 |
- BUS 335 Small Business Management | 3 |
- CHE 210 Clinical Pharmacology | 3 |
- HSC 485 Research and Project Proposal | 3 |
- MATH 362 Statistical Methods II | 4 |
- PSY 215 Abnormal Psychology I | 3 |
- PSY 216 Abnormal Psychology II | 3 |
- PSY 220 Community Psychology | 3 |
- PSY 311 Human Growth and Development I | 3 |
- PSY 312 Human Growth and Development II | 3 |
- PSY 336 Health Psychology I | 3 |
- PSY 337 Health Psychology II | 3 |
- PSY 366 Psychopharmacology | 3 |
- Other general and major electives with adviser consent.

* PHY 201, PHY 202, PHY 203 may be substituted with adviser consent.
** MATH 243 may be substituted with adviser consent.

When choosing the major electives or substituting courses, students are responsible for completing a minimum of 60 credits of upper-division work before a degree will be awarded. Upper-division work is defined as 300 and 400 level classes at a bachelor's degree granting institution.
Conservancy, Klamath County Soil and Water Conservation District and JELD-WEN. Many Environmental Sciences majors find part time or summer employment directly related to their studies.

Degree Requirements
Students must meet the general education requirements, as stated elsewhere in this catalog, and satisfactorily complete the courses listed in the curriculum to obtain a Bachelor of Science in Environmental Sciences. A total of 182 credits are required for the degree. Students are encouraged to develop an area of technical expertise based on their own interests. The sophomore project provides an opportunity for independent investigation early in the student’s academic career. Students prepare the groundwork for their senior project at the end of the junior year in BIO 496 - Senior Project Data Collection. The project culminates in BIO 498 - Senior Project Presentation - in winter of senior year.

Students are required to pass each science course with a grade of “C” or better. This requirement is based on the quantitative skills needed in later courses as well as the degree of integration in subject material that is present throughout the program.

The Environmental Sciences Curriculum
The Environmental Sciences curriculum integrates “hands-on” skills and knowledge. Field or laboratory work are important components of many ES courses. Several freshman and sophomore courses allow a student to develop skills in computer applications, Geographic Information Science (GIS), Global Positioning Systems (GPS), simulation modeling, streamwater chemistry and riparian assessment methods at his/her own pace using customized CD-ROMs. Students typically apply several of these skills to their sophomore and senior projects.

Reference
Please view individual course descriptions under the following prefixes: BIO, CHE, ENV, GIS, and HSC. The Biology degree and Health Sciences degree also offer curriculum maps under their respective entries.

 Bachelor of Science in Environmental Sciences

Curriculum
Required courses and recommended terms during which they should be taken:

Freshman Year Fall
BIO 211 Principles of Biology 4
GIS 103 Introduction to GIS 1
BIO 111 Introduction to Environmental Sciences 4
MATH 111 College Algebra 4
WRI 121 English Composition 3
Total 16

Freshman Year Winter
BIO 212 Principles of Biology 4
BIO 112 Introduction to Data Analysis or MIS 102 Spreadsheet Software Laboratory 1
CHE 105 Physical Geology: Geomorphology 3
GEOG 105 Physical Geography: Geomorphology 3
MATH 112 Trigonometry 4
Humanities elective 3
Total 16

Sophomore Year Fall
CHE 221 General Chemistry 5
BIO 225 Riparian Assessment Methods 1
CST 116 C++ Programming I or MIS 115 Visual BASIC Programming 4
GEOG 105 Physical Geography: Geomorphology 3
MATH 251 Differential Calculus 4
SPE 111 Fundamentals of Speech 3
Total 17

Sophomore Year Winter
CHE 222 General Chemistry 5
BIO 261 Sophomore Project Proposal 1
GIS 205 GIS Data Integration 2
MATH 252 Integral Calculus 4
WRI 227 Technical Report Writing 3
Total 15

Sophomore Year Spring
CHE 223 General Chemistry 5
BIO 262 Sophomore Project 4
BIO 327 General Ecology ‡ 4
CHE 231 Streamwater Chemistry 1
CHE 232 Streamwater Sampling 2
Total 16

Junior Year Fall
CHE 331 Organic Chemistry I 4
MATH 361 Statistical Methods I 4
PHY 221 General Physics with Calculus ** 4
SPE 321 Small Group and Team Communication 3
Total 15

Junior Year Winter
BIO 485 or Klamath Bioregional Studies ‡ 3
BIO 495 Senior Project Proposal 1
CHE 315 Environmental Chemistry and Toxicology 3
PHY 222 General Physics with Calculus ** 4
Technical Emphasis * 4
Total 15

Junior Year Spring
BIO 434 or Data Analysis Methods 1
BIO 497 Senior Project Proposal 1
CHE 465 Environmental Regulations 3
WRI 322 Advanced Technical Communication 1
Technical Emphasis * 4
Total 16

Junior Year Winter
BIO 497 or Senior Project Data Analysis 1
BUS 415 Environmental Regulation 3
CHE 465 Fate and Transport of Pollutants 4
WRI 322 Advanced Technical Communication 1
Technical Emphasis * 4
Total 13

Senior Year Fall
BIO 485 or Klamath Bioregional Studies ‡ 3
BIO 498 or Senior Project Presentation 1
CHE 434 Data Analysis Methods 1
WRI 321 Technical Emphasis * 4
Humanities elective 3
Social Science elective 3
Total 15

Senior Year Spring
Humanities elective 3
Social Science elective 3
Technical Emphasis * 4
Technical Emphasis * 4
Total 14

* May be 3 or 4 credits; a total of 24 credits of “technical emphasis” courses are required.
** Algebra-based PHYS 201, PHYS 202, and PHYS 203 or calculus-based PHY 221, PHY 222, and PHY 223 are acceptable.
‡ Offered in alternating years.
Select 24 credits from one of the following areas of emphasis:

**Watershed Science emphasis:**
- BIO 337 Aquatic Ecology 4
- BUS 416 Environmental Management 3
- CHE 325 Soil Science 4
- CHE 332 Organic Chemistry II 4
- CHE 333 Organic Chemistry III 4
- CHE 341 Instrumental Methods/Data Acquisition I 4
- CHE 342 Instrumental Methods/Data Acquisition II 4
- CHE 450 Biochemistry I 4
- CHE 451 Biochemistry II 4
- CHE 452 Biochemistry III 4
- CHE 455 Water Quality Technology 3
- CIV 362 Hydrology and Surface Water Management 4
- CIV 466 Solid and Hazardous Waste Management 3
- CIV 467 Groundwater 3
- ENV 325 Environmental Microbiology 4
- ENV 336 Environmental Hydrology 4
- ENV ENV elective * varies
- GIS 466 Integrated Watershed Analysis 4

**GIS Emphasis:**
- ENV ENV elective * varies
- GIS 306 Geospatial Raster Analysis II 4
- GIS 316 Geospatial Vector Analysis I 4
- GIS 326 Geospatial Vector Analysis II 4
- GIS 332 Customizing the GIS Environment I 4
- GIS 351 Customizing the GIS Environment II 4
- GIS 446 GIS Database Development 4
- GIS 456 GIS Management 3

* ENV 343, ENV 435, adviser approved independent study, or an upper-division elective from another department with adviser approval.
Health Sciences Program
(See also Pre-Medical Professions Major in the Biology Program)

Burton D. Clark, Program Director
Office: DOW, 220


Degree Offered
Bachelor of Science in Health Sciences

Objective and Career Opportunities
The degree program provides an intensive course of study in the basic sciences, social sciences, communication, and mathematics to prepare students for entry into professional undergraduate and graduate programs in the medical sciences. The program will meet prerequisite requirements for schools of medicine, dentistry, veterinary medicine, osteopathic medicine, optometry, pharmacy, and podiatry and for graduate programs in physical therapy and occupational therapy. The first two to three years of the curriculum can also be used as preparation for allied health programs such as medical laboratory technology, respiratory therapy, speech pathology and audiology, medical imaging technology, dental hygiene, nursing, and related fields. Courses in health management, microbiology, and molecular biology also provide strong preparation for graduate work in biotechnology, education, public health, and medical administration.

Student Preparation
The health sciences curriculum is a demanding instructional program requiring considerable effort in science and mathematics coursework. Prospective students are advised to complete two to three years of high school mathematics and a minimum of three years of high school science (biology, chemistry, and physics). Admission requirements for the first year of the program are identical to the published admission requirements for OIT.

Degree Requirements
The minimum graduation requirement is 180 credit hours of prescribed coursework. Students must meet the general education requirements, as stated elsewhere in this catalog, and satisfactorily complete the courses listed in this curriculum to obtain a Bachelor of Science degree in Health Sciences. Health Sciences students must complete every science course with a minimum grade of “C” and must maintain a minimum grade point average of 2.5 in lower division science courses to advance to upper-division science courses in the major.

Because the prerequisite requirements and recommended courses for entry into different health professions and graduate schools differ, some upper-division courses may be substituted for others, with approval of your academic adviser. The prescribed courses of the Health Sciences Program are very similar to the pre-medical professions major in the Biology Program. Students may choose either a biology degree or health sciences degree.

Reference
Please view individual course descriptions under the following prefixes: BIO, CHE, ENV, GIS, and HSC. The biology degree and environmental sciences degree also offer curricula maps under their respective entries.
<table>
<thead>
<tr>
<th>Junior Year Winter</th>
<th>BIO 332</th>
<th>Human Anatomy and Physiology II</th>
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<tr>
<td></td>
<td>CHE 332</td>
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<td>PHY 202</td>
<td>General Physics **</td>
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<tr>
<td>Junior Year Spring</td>
<td>BIO 333</td>
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<td>PHY 203</td>
<td>General Physics **</td>
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<td>Senior Year Fall</td>
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<tr>
<td>Senior Year Winter</td>
<td>BIO 346</td>
<td>Pathophysiology I</td>
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<tr>
<td>Senior Year Spring</td>
<td>BIO 347</td>
<td>Pathophysiology II</td>
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<tr>
<td></td>
<td>BIO 436</td>
<td>Immunology</td>
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<td>CHE 452</td>
<td>Biochemistry III</td>
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<td>Other General Major Elective Choices</td>
<td>BIO 342</td>
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<td>BUS 215</td>
<td>Principles of Management</td>
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<td>BUS 306</td>
<td>Principles of Marketing</td>
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<td>BUS 314</td>
<td>Entrepreneurship</td>
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<td>BUS 316</td>
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<td>BUS 317</td>
<td>Health Care Management</td>
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<td>BUS 335</td>
<td>Small Business Management</td>
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<td></td>
<td>CHE 210</td>
<td>Clinical Pharmacology</td>
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<td></td>
<td>HSC 485</td>
<td>Research and Project Proposal</td>
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<td>MATH 362</td>
<td>Statistical Methods II</td>
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<td></td>
<td>PSY 215</td>
<td>Abnormal Psychology I</td>
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<td>PSY 311</td>
<td>Human Growth and Development I</td>
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<td>Human Growth and Development II</td>
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<td>PSY 366</td>
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When choosing the major electives or substituting courses, students are responsible for completing a minimum of 60 credits of upper-division work before a degree will be awarded. Upper-division work is defined as 300 and 400 level classes at a bachelor's degree granting institution.

** PHY 201, PHY 202 and PHY 203 may be substituted with PHY 221, PHY 222 and PHY 223 with adviser consent.

* MATH 243 may be substituted with adviser consent.
Nursing—Oregon Statewide Integrated Nursing Program

Michael R. Bleich, R.N., Ph.D., Dean
Carol Craig, R.N., F.N.P., Ph.D., Director, Academic Programs
Office: Boivin Hall, 176

Professor: J. Heineken, S. Theis
Associate Professor: C. Craig
Assistant Professors: J. Henzel, T. Ross

This program is offered at Oregon Institute of Technology by the Oregon Health & Science University School of Nursing, in cooperation with OIT.

Degrees Offered
Bachelor of Science with a major in Nursing

The OHSU School of Nursing is a health professions leader in academic productivity and innovative educational programming. It is recognized as a model in educating students for careers in nursing at both the graduate and undergraduate levels. In July 1993, the Nursing Program at OIT became a member of the Statewide Integrated Nursing Education System for Oregon. Campuses are located in: Ashland, at Southern Oregon University; Klamath Falls, at Oregon Institute of Technology; La Grande, at Eastern Oregon University; and Portland, at Oregon Health & Science University. In addition to a basic baccalaureate degree in nursing, the statewide program offers opportunities for RNs seeking B.S. degrees at each campus and at outreach sites such as Bend, Oregon.

Non-nursing coursework may be taken at Oregon Institute of Technology, a community college, or other accredited institutions of higher learning. Pre-nursing majors must apply and be accepted by the Oregon Health & Science University School of Nursing in order to progress into the upper-division nursing major. Students enrolled at OIT will be given first consideration for admission to nursing on the OIT campus.

The baccalaureate in Nursing Program provides the essential foundation for professional nursing licensure and practice. The Nursing Program, as of Fall 2003, includes one year of Pre-nursing courses and then, after acceptance into the program, three years of professional nursing courses and general courses, as well. Selection into the professional program is competitive.

Nursing courses build upon and complement the liberal arts and science foundation required for professional practice. The graduate of the B.S. program is eligible to complete the registered nursing licensure examination and is prepared to assume responsibility for providing professional nursing care.

Options for Registered Nurses to Obtain a B.S.
There is a process in place for assisting RNs to complete coursework to obtain a B.S. Please contact the School of Nursing for information at (541) 552-8421 or at cook1@ohsu.edu.

Approval and Accreditation
The Nursing Program is approved by the Oregon State Board of Nursing (OSBN) and accredited by the National League for Nursing (NLN-AC—Address: 61 Broadway, NY, NY 10006). The School of Nursing holds the approval of the Commission on Collegiate Nursing Education (CCNE). The NLA and CCNE are specialized accrediting bodies recognized by the Council for Higher Education Accreditation and/or the Secretary of the U.S. Department of Education.

Admission
To be considered for admission to the School of Nursing, a student must submit an online application and official transcripts (www.ohsu.edu/son).

The application process begins October 1 through February 15. To apply you must have 30 credits completed by the end of Winter term, be at the MATH 95/MATH 100 or higher level and have completed Human Anatomy and Physiology I.

Transfer Credits
Transfer credits from NLN or CCNE accredited nursing programs are accepted subject to review by OHSU Registrar's office for comparability and number of credits which may be granted.

Requirements for Major
Students with a baccalaureate degree in another discipline should see a nursing adviser for requirements for the nursing major.

Bachelor of Science with a Major in Nursing

Curriculum
Required courses and terms during which they may be taken.

Pre-Nursing
Freshman Year Fall
BIO 231 Human Anatomy and Physiology I 4
CHE 101/CHE 104 Elementary Chemistry* 4
or
General, HUM, NS or SS electives** 4
MATH 95/MATH 100* Elementary Algebra/Intermediate Algebra 4
or
MATH 243 Introductory Statistics 4
PSY 201 Psychology 3
Total 15

Freshman Year Winter
BIO 232 Human Anatomy and Physiology II 4
CHE 102/CHE 105 Elementary Chemistry* 4
or
General, HUM, NS, or SS electives** 4
WRI 121 English Composition 3
PSY 311 Human Growth and Development I 3
General, HUM, NS or SS electives** 1-3
Total 15-18
Freshman Year  
Spring

BIO 233  Human Anatomy and Physiology III  4
CHE 103/CHE 106
Elementary Chemistry*  4
or
General, HUM, NS or SS electives**  2-4
BIO 205  Nutrition  3
PSY 312  Human Growth and Development II  3
WRI 122  English Composition  3
Total  15-17

* Math competency may be demonstrated by a math placement test or by successful completion of MATH 95/MATH 100 or higher. MATH 100 qualifies you to take the Chemistry series which is a prerequisite for the Nutrition course on the OIT campus. Please note that MATH 95/MATH 100 is also a prerequisite for MATH 243 Introductory Statistics, a course required later in the Nursing Program. MATH 95 credits do not count toward your degree, but are counted toward the 30 required credits to apply.

** General, Humanities, Natural Science or Social Science electives (college-level 100 or above).

* If Nutrition is taken elsewhere, CHE 101 /CHE 104, CHE 102/VHR 105, CHE 103/CHE 106 is not required, although Chemistry is highly recommended.

Professional Courses

Sophomore Year  
Fall
BIO 207  Human Genetics  4
NRS 210  Foundations of Nursing–Health Promotion  9
WRI 123  English Composition or preferably  3
WRI 227  Technical Report Writing  3
Total  15

Sophomore Year  
Winter
NRS 230  Clinical Pharmacology I  3
NRS 232  Pathophysiological Processes I  3
NRS 211  Foundations of Nursing in Chronic Illness I  6
BIO 105  Microbiology  4
Total  16

Sophomore Year  
Spring
NRS 231  Clinical Pharmacology II  3
NRS 233  Pathophysiological Processes II  3
NRS 212  Foundations of Nursing in Acute Care I  6
Total  12

Junior Year  
Fall
NRS 321  Foundations of Nursing in Acute Care II and End-of-Life  9
NRS 412  Leadership, Outcomes Management in Nursing  10
NRS 424A-H  Nursing Discipline Focus  1
Total  11-14

Junior Year  
Winter
NRS 322  Foundations of Nursing in Acute Care II and End-of-Life  9
NRS 424A-H  Nursing Discipline Focus  1
Total  11-15
Selected Courses in Physical Education and Health Education

Physical Education Philosophy and Courses
At Oregon Institute of Technology, the physical education philosophy is that every man and woman can achieve and maintain fitness through a sound program based on varied developmental, sport, and recreational activities. The physical education courses provide basic instruction in vigorous activities.

Course offerings include aquatics, fitness center activities, lifeguard training, archery, ice skating, golf, rugby, water safety instruction, basketball, varsity sports, major sports seminars in varsity sports offered at OIT, and officiating techniques.

Health Education Philosophy and Courses
Selected courses in health education are provided to assist students to prevent physical and mental health disorders and to promote well-being.

Course Policy
Physical education and health education courses are offered as elective credits only. Some courses may require an additional course fee depending on facility and special equipment needs. There is no limit on the number of times a physical education course can be repeated.
Notes
Graduate Programs
Admissions and Academic Policies

Master’s degree programs at Oregon Institute of Technology provide students with opportunities for advanced study in various disciplines. Graduates will develop the technical competence required for leadership roles in business and industry. Graduate education at OIT maintains a hands-on focus. Our mission is to integrate theory and practice.

Admission
The Office of Admissions, in conjunction with the Provost’s Office and the appropriate academic department, maintains all pertinent information regarding the admission of graduate students.

Admission Requirements
To be considered for admission to a graduate program, an applicant must have a baccalaureate degree from a regionally accredited college or university, as well as a scholastic record that evidences the ability to perform satisfactory graduate work. Specifically, a student shall:

• Have completed a four-year college course of study and hold an acceptable baccalaureate degree from an institution accredited by a regional accrediting association.

• Be in good academic standing at the last college or university attended.

• Have attained a grade point average of at least 3.0 on a 4.0 scale for the last 90 term (60 semester) units attempted.

• Have attained a grade point average of at least 3.0 on a 4.0 scale for the last 45 term hours in the major.

• Satisfactorily meet the professional, personal, scholastic, and other standards for graduate study.

• Some programs may require qualifying examinations. Unusual circumstances may warrant exceptions to these criteria.

Application as a Degree-Seeking U.S. Resident Student
Degree-seeking students must submit the following items to the Office of Admissions before the deadlines specified in the Application Deadlines section:

• An official admissions application, along with a $50 non-refundable application fee. The application fee is waived for applicants who are currently attending OIT or who graduated from OIT within the previous two years.

• Official transcripts from each post-secondary educational institution attended.

Individual programs may have additional requirements. Applicants must submit all required items before admission to the graduate program will be considered. Submitting the items, however, does not ensure admission. Applicants will receive official notification of admission after a review of the application by the Office of Admissions and the graduate program department.

Application as an International Degree-Seeking Graduate Student
OIT must assess the academic preparation of international students. For this purpose, international students, including those who hold U.S. visas as student exchange visitors or other non-immigrant classifications, should apply early. Official transcripts must be on file at least eight weeks before registration for the first term and, if not written in English, must be accompanied by a certified English translation.

All international applicants from countries in which English is not the native language must take the Test of English as a Foreign Language (TOEFL). OIT requires that international students score at least 550 on the Test of English as a Foreign Language for graduate admission. This is equivalent to a
The following is an application checklist for degree-seeking international students:

1. Submit the graduate application for admission with the $50 (U.S.) application fee.
2. Submit the international graduate student supplement to the graduate application form (as well as the Statement of Financial Responsibility form), available from the Admissions Office.
3. Provide evidence of ability to meet educational expenses at OIT. The Statement of Financial Responsibility form must be completed and submitted with documentation such as official bank statements and tax returns.
4. Official academic transcripts of all university course work sent to OIT.
5. For university course work done outside the United States, transcripts must be reviewed by an evaluation service. There are several such services that are acceptable. A "course-by-course evaluation" or a "detail report" is necessary.
6. Proof of proficiency in the English language. OIT requires that international graduate students score at least 550 on the Test of English as a Foreign Language. This is equivalent to a 79 on the Internet-based TOEFL (iBT) or 213 on the computer-based TOEFL. This requirement may be waived for some students whose primary language is English.
7. Students currently in the United States should submit a photocopy of the I-20 form and passport.

Individual programs may have additional requirements.

Application Deadlines
OIT encourages all prospective students to submit graduate application materials six to nine months in advance of the planned enrollment date. However, applications will be accepted any time before the deadlines listed below. The recommended entrance time is Fall term.

- Fall Term: July 1
- Winter Term: October 1
- Spring Term: January 1

Social Security Number Disclosure and Consent Statement
U.S. nationals are requested to voluntarily provide your Social Security Number to assist OUS (and organizations conducting studies for or on behalf of OUS) in developing, validating, or administering predictive tests and assessments; administering student aid programs; improving instruction; internal identification of students; collection of student debts; or comparing student educational experiences with subsequent work force experiences. When conducting studies, OUS will disclose your Social Security Number only in a manner that does not permit personal identification of you by individuals other than representatives of OUS (or the organization conducting the study for OUS) and only if the information is destroyed when no longer needed for the purposes for which the study was conducted. By providing your Social Security Number, you are consenting to the uses identified above. This request is made pursuant to ORS 351.070 and 351.085. Provision of your Social Security Number and consent to its use is not required and, if you choose not to do so, you will not be denied any right, benefit, or privilege provided by law. You may revoke your consent for the use of your Social Security Number at any time by writing to: Registrar, Oregon Institute of Technology, 3201 Campus Drive, Klamath Falls, OR 97601.

Residency Classification
See the residency section of this catalog.

Tuition and Fees
See the tuition and fees section of this catalog.

Graduate Assistantships
Oregon Institute of Technology offers graduate assistantships, awarded on a competitive basis, to qualified graduate students based on department needs. Compensation varies with the type of service, the amount of time required for performing the service, and the academic qualifications and experience of the appointee.

An applicant for a graduate assistantship must be admitted to a graduate program. Graduate departments usually award appointments and assistantships by early summer, effective at the beginning of the next academic year. A graduate assistant application form is available from the appropriate department.

Types of Assistantships
Graduate assistantships at OIT are either research assistantships (RAs) or teaching assistantships (TAs). Research assistantships are awarded by the faculty member administering the research grant and involve providing assistance in fulfilling the goals and objectives of the grant. Depending upon the grant, research assistantships may include additional support for summer term. If you are interested in a research assistantship, contact the faculty members responsible for the grant.

Teaching assistantships are awarded by the department and involve classroom and laboratory instruction. TAs are only awarded for nine-month periods during the academic year. If you are interested in a TA, contact the individual department to determine availability.

Assistantship Offer
Assistantship contracts are awarded annually and renewal is dependent upon competent performance of assistantship duties, adequate academic progress and the availability of funds. Assistantship appointments are for two academic years; however, under special circumstances, appointments may continue for a third and final year.

Assistantships include a tuition waiver as well as a monthly stipend based upon a percentage of a full-time equivalent (FTE) salary. Most assistantships are at the 0.3 or
30 percent level (12 hours per week) and the monthly stipend will be 30 percent of the FTE salary. Graduate student stipends are not subject to Social Security (FICA) taxes but are subject to income taxes and should be reported on your tax return.

Assistantship Course Load
Graduate assistants are expected to maintain full-time enrollment (nine credits). Graduate assistants not enrolled in nine credits of formal courses must supplement the course load with thesis (503) credits to maintain full-time enrollment status.

Satisfactory Progress
Graduate assistants must make satisfactory progress toward a graduate degree to retain a graduate assistantship. Satisfactory progress includes:

- Maintaining a 3.0 or higher grade point average.
- Maintaining full-time student enrollment.

Failure to maintain satisfactory academic progress will result in loss of an assistantship.

Academic Policies
The Graduate Council determines graduate academic policies at OIT. Other academic policies and procedures are described and/or defined in the general policies of OIT.

Student Rights and Responsibilities
OIT encourages students to perform at a high academic level, and students are responsible for knowing degree requirements and enrolling in courses that will enable them to complete the master’s program. OIT expects students to conduct themselves in a manner compatible with the university’s function as an institution of higher learning. Students should acquaint themselves with regulations for the standard of work required to continue in the graduate school. For additional information, students should consult their graduate adviser.

Academic Integrity
OIT’s goal is to foster an atmosphere that produces educated, literate graduates. Academic misconduct, such as cheating and plagiarism, will not be tolerated.

Cheating includes, but is not limited to, the following:

- Use of any unauthorized assistance in taking quizzes, tests, or examinations.
- Dependence upon the aid of sources specifically prohibited by instructors in writing papers, preparing reports, solving problems or carrying out other assignments.
- The acquisition, without permission, of tests or other academic materials belonging to a faculty member of the school.

Plagiarism includes, but is not limited to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without acknowledging the source. Plagiarism occurs when a student either copies the work of another person and attempts to receive credit for that work or acquires and uses prepared material from someone who is selling academic materials. These examples are intended to provide general guidelines and are in no way comprehensive in describing academic dishonesty.

Faculty may assign specific penalties for cases of academic misconduct, including a failing grade for a test or assignment, a reduced grade for a test or assignment, or a failing grade in the course. Responding to academic dishonesty is the responsibility of the course instructor. If a student commits plagiarism or other academic dishonesty during the graduate project, the adviser, in consultation with the associate provost, determines the appropriate response.

All graduate students should acquaint themselves with the definitions and implications of academic misconduct as explained in OIT’s student conduct code. Repercussions for a student guilty of academic conduct violations range from a warning to expulsion.

Students may contest a charge of academic misconduct by following the grievance procedure outlined in the OIT catalog and the student handbook, available on the OIT Web site.

Student Records
The Registrar's Office maintains a permanent file for each graduate student. Faculty advisers will maintain a file of advising records, grade information and other correspondence pertaining to each graduate student’s academic progress. For more information on student records, contact the Registrar’s Office.

Enrollment Status
Full and part time credit loads for graduate students are defined as follows:

- Full time: 9 or more credits
- 3/4 time: 7 - 8 credits
- Half time: 5 - 6 credits

OIT undergraduate seniors may enroll in 500-level graduate courses for graduate credit with the approval of the student’s undergraduate adviser and the associate provost. Nine credits are applicable to a graduate degree.

Students who are not yet admitted to OIT may take up to nine credits which can apply toward the graduate degree. These courses cannot count for both undergraduate and graduate credits.

OIT offers some courses which are dual-listed at the 400- and 500-level. The 400-level courses apply only to an undergraduate degree, while 500-level courses apply only to a graduate degree. Students enrolled in a dual-listed 500-level course will be required to complete additional work to obtain graduate credit.

Academic Prerequisite Deficiencies
Students who have prerequisite deficiencies for graduate studies may be required to take additional course work prior to completing their graduate studies, as determined by the graduate program coordinator. If there are deficiencies, the coordinator will recommend substitute courses, and these
are entered on the Graduate Program Form. When students pass these courses with a B or better, they become fully qualified graduate students. Prior to completion of the listed courses, the graduate student is considered "conditionally admitted."

**Academic Performance Standards**

Students must maintain a cumulative GPA of 3.0 or better in all graduate work specific to the program of study to remain in good academic standing. Grades below C do not meet requirements for a graduate degree.

Graduate students earning a cumulative GPA of less than 3.0 will be placed on probation and, if no improvement is made, will be suspended from the graduate program. Conditions established for probation and suspension are listed below:

**Academic Probation:** Students having 9 or more attempted credit hours will be placed on academic probation for each term that their cumulative GPA falls below 3.0.

**Academic Suspension:** Students who have served one term on academic probation and have not raised their cumulative GPA to 3.0 in the next term will be placed on academic suspension. Suspended students lose their institutional financial aid, including graduate research and teaching assistantships.

A student may appeal academic suspension by following the process outlined in the OIT catalog. A successful appeal results in probation status.

**Transfer Credits**

Students may petition to transfer up to 12 graduate term hours earned at other accredited institutions and apply those credits toward an OIT graduate degree. However, each course must be consistent with the program of study planned by the student and the graduate adviser. Only grades of A and B are acceptable as transfer credit into the graduate program.

**Graduate Grading Policy**

OIT uses a 4.0 grading scale to evaluate student performance. Upon completion of a course or upon termination of attendance in the course, a student's performance will be graded by the instructor and reported to the Registrar's Office as follows:

**Withdrawals**

Students may withdraw from a course during the first 10 days of class with no entry on the permanent academic record, except for complete withdrawal from all classes. After this date and through Friday of the seventh week, students who withdraw from a class will receive a W, which is not included in the grade point average. After Friday of the seventh week, students will receive a letter grade assigned by the instructor.

A complete withdrawal from all courses is possible at any time during the term until the last day of class by filing the proper forms with the Registrar's Office. Specific deadlines are published in the quarterly class schedule.

While it is the student's responsibility to properly withdraw from a class, an instructor may administratively withdraw a student for non-attendance.

**Academic Requirements**

The master's degree academic requirements are specified by the program. The student, in conference with the graduate faculty adviser, will prepare a program of study for the master's degree as a guide for planning an academic schedule. In some cases, the student may need to submit the proposed program to the graduate program coordinator for approval.

**Application for Graduation**

To apply for graduation, the student must submit a petition for graduation to the Registrar's Office two terms in advance of the anticipated final term of work. The petition is a record of the approved program of study. To receive favorable action, candidates must meet the following requirements:

- Show that course requirements for the master's degree will be satisfied before or during the final term
- Maintain an overall grade point average of at least 3.0
- Provide evidence of passing any qualifying or comprehensive examinations, including defense of the master's project or thesis

**Right of Appeal**

Students have the right to appeal academic policies or requirements. Grade appeals should be initiated through the instructor, graduate program coordinator, and the associate provost. For appeals regarding specific degree requirements, students should consult their graduate adviser, the graduate program coordinator, and the Graduate Council. Students should submit all other academic policy appeals in writing to the Graduate Council through the Provost's Office.
Course Descriptions

Course descriptions in this section are reasonable summaries only and are neither completely inclusive nor completely exclusive of total course content for any given course.

Courses listed herein may or may not be offered each term. Absence of an (F, W, or S) does not necessarily mean the course is offered each term.

Courses are listed alphabetically according to prefix.

Numbering Code
Courses are grouped into a three-digit number series which indicates the normal teaching levels. Some variations may occur.

1-99 Preparatory and Developmental Courses
Courses numbered below 100 are not applicable toward a degree even though units are assigned, grades are awarded and tuition is assessed.

Lower-Division Courses (freshman and sophomore)
100-199 First-Year Courses
200-299 Second-Year Courses

Upper-Division Courses (junior and senior)
300-399 Third-Year Courses
400-499 Fourth-Year Courses

Other Codes
Each Term:
Some courses in this section have a code following the course title. This code designates when the course will be offered. F indicates fall, W indicates winter, S indicates spring.

Even or Odd:
When accompanying a course description, these terms indicate that a given course is offered during the designated term or terms every other year only. For example:

MATH 355 Graphical Analysis
(F, Even)

means that this course is offered only in even numbered years during the fall term.

Lecture, Lab, Credit Hours:
The three numbers following the course title. For example:

CST 101 Introduction to Personal Computing
(3-3-4) = weekly lecture hours – lab hours – total credits
**Special Terms**

As Required: This term designates a course or series of courses which will be offered only as enrollment, student interest, or individual department needs demand and as staffing allows. A course so designated may be offered if special student needs, situations of extreme hardship, or other unusual circumstances deem it in the best interest of both the student(s) and the institution to do so.

Hours to be Arranged Each Term: Normally students negotiate individually with faculty members and/or departments and arrange to have courses so designated offered for the term most suitable to their unique situation.

Corequisite: A course that must be taken simultaneously with another course. Corequisites are noted at the end of each course description.

Prerequisite: A course that must be passed satisfactorily before another course may be taken. Prerequisites are noted at the end of each course description.

Quarter Credit: A numerical credit value assigned to certain number of lecture or laboratory hours. A lecture class meeting for three 50-minute periods a week would be assigned three units of credit. Students have traditionally been expected to spend an additional six hours of outside class work per week for each three units of lecture class credit. Generally, a lab class requires three hours per week for one unit of credit, or a total of nine in-lab hours with no additional outside class work expected for three units of lab class credit.

Reading and Conference: A course taken on an independent study basis with the supervision of an instructor, usually consisting of weekly conferences, assigned readings, research papers, etc.

Seminar: A class taught by a group discussion process rather than by means of formal lecture. Student research and reporting are usually expected.

**Sequence:** A series of classes in the same subject area that, taken as a whole, comprise a full year’s work. Generally, course sequences are numbered consecutively, and often (though not always) should be taken in the numerical order listed (i.e., CHE 201 should be taken before CHE 202, etc.).

(ACC) Accounting

**ACC 101 Introduction to Accounting**  
(3-0-3)  
The principles of elementary accounting systems for small businesses.

**ACC 115 Basic Income Tax Preparation**  
(2-4-3)  
Federal and state laws, ethics and regulations applicable to individual income tax returns. Prepares tax preparers for the qualifying examination and meets the personal needs of individuals preparing their own returns.

**ACC 124 Business Math/Machines**  
(3-0-3)  
Business math such as decimals, percents, markups, proration and interest. Emphasis on operational techniques of electronic calculators for problem solving.

**ACC 201 Principles of Accounting I**  
(4-0-4)  
Introduction to terminology, content and form of financial statements for sole proprietorships. Recording of data for use in preparing profit-and-loss statements and balance sheets.  
Prerequisite: MATH 100 or equivalent.

**ACC 202 Principles of Accounting II**  
(4-0-4)  
A continuation of ACC 201 with emphasis on corporate accounting.  
Prerequisite: ACC 201 with grade “C” or better.

(ACAD) Academic Success

**ACAD 101 Student Success Seminar**  
(Variable Credit)  
A course to facilitate the success of first year students at OIT. Emphasis on faculty-student and student-student interactions. Includes academic resources, campus services, the learning process, communication skills, health and wellness issues. May also include academic skills and career planning.

**ACAD 105 Achieving Academic Success**  
(2-0-2)  
Course identifies attitudes, behaviors and specific strategies that will lead to academic success at the college level. Topics may include study habits, time management, strategies for memorization and test-taking and goal-setting.

**ACAD 107 Seminar**  
(Hours to be arranged each term.)

**ACAD 115 Career Exploration**  
(3-0-3)  
Effective academic and career decision-making is facilitated by thorough self-assessment, exploration of the world of work and identification of appropriate academic majors. Course includes activities such as personality type testing, research, visits to academic departments and information interviews with professionals in various occupations.

**ACAD 120 Stress Management**  
(2-0-2)  
Identifies signs and symptoms of stress as well as the ways in which they impact student academic success. Effective ways of dealing with stress, including relaxation techniques, will be identified, discussed and practiced.

**ACAD 135 Reading Tutor**  
(2-0-2)  
For “America Reads” tutors. Provides information about how children learn to read and write, strategies for teaching children and working in an elementary school.

**ACAD 207 Seminar**  
(Hours to be arranged each term.)

**ACAD 295 Individual Studies**  
(Hours to be arranged each term.)
ACC 298 Reading and Conference
(Hours to be arranged each term.)

ACC 299 Laboratory Practice
(Hours to be arranged each term.)

ACC 307 Seminar
(Hours to be arranged each term.)

ACC 320 Cost Accounting I
(4-0-4)
Cost measurement, planning, control and performance evaluation and behavioral issues. Cost accumulation systems including job order costing, process costing and activity-based costing will be explored.
Prerequisite: ACC 203 with grade “C” or better.

ACC 321 Cost Accounting II
(4-0-4)
Continuation of Cost Accounting I. Strategic planning and financial budgeting. Techniques to control and evaluate operations including variance analysis based on flexible budgets and standard costs. The role of responsibility accounting for revenue, cost, contribution and profit centers will be investigated.
Prerequisite: ACC 320 with grade “C” or better.

ACC 325 Finance
(4-0-4)
Emphasis on working capital management, long-term finance and capital structure.
Prerequisites: ACC 203 and MATH 105 or MATH 111.

ACC 331 Intermediate Accounting I
(4-0-4)
Financial accounting concepts, theory and practices involving current asset accounts; practical application of theory to accounting problems.
Prerequisite: ACC 202 with grade “C” or better.

ACC 332 Intermediate Accounting II
(4-0-4)
Accounting concepts, theory and practices involving ownership equities, interpretation, analysis of financial statements and correction of errors; practical application of theory to accounting problems.
Prerequisite: ACC 331 with grade “C” or better.

ACC 333 Intermediate Accounting III
(4-0-4)
Accounting concepts, theory and practices involving plant assets, intangible assets and liabilities; practical application of theory to accounting problems.
Prerequisite: ACC 332 with grade “C” or better.

ACC 405 Accounting Information Systems
(4-0-4)
Analysis of accounting cycles and the associated controls with emphasis on problem solving and critical thinking. Includes computerized accounting system implementation.
Prerequisites: ACC 203, MIS 312, MIS 375.

ACC 407 Seminar
(Hours to be arranged each term.)

ACC 411 Income Tax Procedures
(4-0-4)
Federal and state income tax laws and regulations applicable to individuals and their businesses including computerized tax return preparation.
Prerequisite: ACC 333 with grade “C” or better.

ACC 412 Corporate Taxation
(4-0-4)
Federal tax law applicable to corporations, partnerships and estates. Emphasis on tax research procedures and locating and evaluating various sources of tax law.
Prerequisite: ACC 411 with grade “C” or better.

ACC 421 Income Tax Procedures Laboratory
(0-6-2)
Lab accompanying class content in ACC 411.

ACC 431 Advanced Accounting I
(4-0-4)
Prerequisite: ACC 333 with grade “C” or better.

ACC 432 Advanced Accounting II
(4-0-4)
Analysis of problems facing small, medium and large companies, with emphasis upon an integrated and concurrent decision making methodology applying economics, finance, organizational theory, quantitative analysis and accounting and tax theory.
Prerequisite: ACC 431 with grade “C” or better.

ACC 435 Auditing
(4-0-4)
Introduction to auditing concepts and practices. Topics include professional standards, audit planning and procedures, ethical considerations, internal controls, professional responsibilities, the acquisition and evaluation of audit evidence and report writing.
Prerequisite: ACC 333, ACC 405, both with grade “C” or better.

ACC 465 Case Studies in Accounting
(4-0-4)
The use of accounting cases to develop problem solving/critical thinking skills. Application of the case methodology to all areas of accounting.
Prerequisites: ACC 320, ACC 431, ACC 435 with grade “C” or better.

ACC 496, 497 Senior Project
(3-0-3)
Development and implementation of an accounting related project for the benefit of an external entity and the student. Projects will include a proposal, analysis, design and implementation. An oral presentation and project documentation will be required at the completion of each course.
Prerequisite: ACC 320 and ACC 405, or instructor consent.

(ANTH) Anthropology

ANTH 101 Introduction to Physical Anthropology
(3-0-3)
An introduction to physical anthropology, emphasizing man’s place in the animal kingdom, evolution of man, fossil hominid forms, Paleolithic cultures and principles of genetics. Satisfies either a science elective or a social science elective.

ANTH 102 Introduction to Archeology
(3-0-3)
Survey of the science of archeology. Covers the biological and social evolution of the human species with emphasis on the growth of human populations and social complexity. Relates site-specific evidence to theories of social change. Discusses field and laboratory methods of archaeology.

ANTH 103 Introduction to Cultural Anthropology
(3-0-3)
Culture, language, subsistence patterns, group formation, kinship, economic systems, political organizations, religion and cultural change.

ANTH 207 Seminar
(Hours to be arranged each term.)
ANTH 335 The Built Environment  
(3-0-3)  
An examination of the American built environment from historical to modern times and the role it plays in shaping American Society. The topics include city planning, architecture, transportation technologies, dam and bridge building and urban sprawl.

ANTH 407 Seminar  
(Hours to be arranged each term.)

ANTH 452 Globalization  
(3-0-3)  
Addresses what globalization is and how it developed and spread. Benefits and harms of globalization in the areas of work, culture, warfare, national sovereignty, health and food. Countervailing pressures from social movements will be examined.  
Prerequisite: WRI 122.

(BIO) Biology  

BIO 101 General Biology  
(3-3-4)  
Introduction to cell biology, genetics and evolution.  

BIO 102 General Biology  
(3-3-4)  
Consideration of phylogenetic relationships of the major groups of plants and animals.  
Prerequisite: None.

BIO 103 General Biology  
(3-3-4)  
Basic animal physiology with emphasis on humans. (Cannot be used for graduation credit by students who have taken BIO 231, BIO 232 or BIO 233.)  
Prerequisite: None.

BIO 105 Microbiology  
(3-3-4)  
Classification, morphology, reproduction, transmission and control of micro-organisms causing disease in man. Laboratory practice in culturing methods, microscopic observation and physical and chemical control.

BIO 111 Introduction to Environmental Sciences  
(3-3-4)  
A topical overview of environmental sciences stressing the integration of the social, natural and physical sciences. Emphasis on active learning.

BIO 112 Introduction to Data Analysis  
(0-3-1)  
Skills in data acquisition from primary and secondary sources. Time series and cross-sectional data. Extensive use of spreadsheets for data analysis and graphical display including trendlines, histograms and cumulative frequency distributions. A series of self-paced tutorials on CD. Basic computer proficiency is expected.

BIO 200 Medical Terminology  
(2-0-2)  
Basic structure of medical works including prefixes, suffixes, roots and combining forms. Correct spelling, pronunciation and meaning of terms are stressed.

BIO 205 Nutrition  
(3-0-3)  
A study of the relationships of food and nutrition to health. An overview of the basic nutrition principles including the nutrients and how they function in the body, nutrient requirements, diet planning and energy balance. Current topics and controversies are examined.  
Pre- or corequisite: CHE 103 or BIO 213 or instructor consent.

BIO 207 Seminar  
(Hours to be arranged each term.)

BIO 209 Current Research Topics in Medical Sciences I  
(1-0-1)  
Introduces students to topics in medicine focusing on global health issues, infectious and chronic diseases. Projects in medical literature research, understanding scientific paper format, preparing technical presentations and public speaking.  
Prerequisite: Biology or Health Sciences major or instructor consent.

BIO 211 Principles of Biology  
(3-3-4)  
Principles of modern biology emphasizing form and function of multicellular plants, major invertebrate phyla and general vertebrate morphology and physiology.

BIO 212 Principles of Biology  
(3-3-4)  
Principles of modern biology emphasizing evolution, ecology, population genetics and behavior of organisms.  
Prerequisite: BIO 211 with grade “C” or better, or with instructor consent.

BIO 213 Principles of Biology  
(3-3-4)  
Principles of modern biology emphasizing the biochemical basis for life processes, cell structure and function. Molecular genetics, cell reproduction, metabolism and form and function of microorganisms.  
Prerequisite: BIO 212 with grade “C” or better, or with instructor consent.

BIO 216 Introduction to Veterinary Medicine  
(3-0-3)  
Covers many aspects of animal health and care, as well as their impact on society. Discussions of husbandry, nutrition, anatomy, preventive medical care, common diseases and behavioral problems of dogs, cats, horses and exotics.

BIO 220 Cardiovascular Physiology  
(3-3-4)  
Application of principles of fluid dynamics to the human vascular system. Detailed considerations of cardiac function and its regulation, analysis of flow in arterial, venous and capillary systems and integration of cardiovascular regulation.  
Prerequisite: BIO 233.
BIO 225 Riparian Assessment Methods
(0-3-1)
Introduction to basic skills needed to determine the functional status of riparian systems. Vegetation identification. Habitat assessment of stream macro-invertebrates. A series of self-paced tutorials followed by an extended field exercise to be conducted on a designated Saturday.

BIO 226 Introduction to Wildlife Rehabilitation
(3-0-3)
Principles of wildlife rehabilitation including state and federal laws, medical terminology, basic anatomy, natural history and diet, form and function and euthanasia. Field captures, basic restraint, first aid, minimum housing requirements and zoonotic diseases are also included.

BIO 231 Human Anatomy and Physiology I
(3-3-4)
Introduction to the systematic studies of human anatomy and physiology. Introduction to cytology and histology followed by the integumentary, skeletal, muscular and endocrine systems and the physiology of excitable tissues. The laboratory sessions emphasize human anatomy using models and human cadavers.

BIO 232 Human Anatomy and Physiology II
(3-3-4)
A continuation of the systematic study of human anatomy and physiology. The nervous, cardiovascular and immune systems are studied. The laboratory sessions emphasize human anatomy using models and human cadavers. Dissections and physiological experiments are conducted. Prerequisite: BIO 231 with grade "C" or better.

BIO 233 Human Anatomy and Physiology III
(3-3-4)
Conclusion of the sequence in human anatomy and physiology. Digestive, respiratory, renal and reproductive systems are examined. Metabolism, human genetics and development are also studied. Laboratory sessions emphasize physiological experiments and human anatomy using models and human cadavers. Prerequisite: BIO 232 with grade "C" or better.

BIO 261 Sophomore Project Proposal
(1-0-1)
Review of the scientific method and scientific research procedures. Identification of a research topic. Preparation and presentation of a research proposal. Prerequisite: BIO 213 or instructor consent.

BIO 262 Sophomore Project
(1-9-4)
Completion of field, laboratory, or investigative project with agencies, faculty members, or industry. Includes data collection, analysis and presentation of report. Prerequisite: BIO 261 or instructor consent.

BIO 313 Botany
(2-6-4)
Field study and identification of the flora of the Pacific Northwest. Vascular plants will be emphasized; algae, fungi and bryophytes will be considered. Principles of plant classification and common plant families are taught. A plant collection is prepared. Prerequisite: BIO 211 or instructor consent.

BIO 317 Invertebrate Biology
(3-3-4)
Survey of invertebrate animals, including morphology, physiology, ecology and phylogeny; comparative anatomy of typical metazoan forms. Laboratory exercises focus on parasites and other economically important species. Intended for biology and pre-professional health majors. Prerequisite: BIO 213 or equivalent.

BIO 325 Applied Aquatic Botany
(2-3-3)
Ecology, taxonomy and economic significance of aquatic plants, including algae. Emphasis placed on determination of contaminants in the physical or biological environment. Prerequisite: BIO 211.

BIO 327 General Ecology
(3-3-4)
An examination of ecological principles applied to microhabitats, habitats and ecosystems. Includes community ecology, population ecology and resource analysis, supplemented by regional and local field exercises with training in measurement and collection of ecological components. Corequisites: GEOG 105, BIO 111 and BIO 213.

BIO 331 Human Anatomy and Physiology I
(3-6-5)
Emphasis on neuromuscular function, including cellular mechanisms, biophysics of conductivity, neural control systems and muscular kinetics. Laboratories include cadaver dissection including cellular mechanisms, biophysics of and computer simulations. Prerequisite: BIO 213.

BIO 332 Human Anatomy and Physiology II
(3-6-5)
Cardiovascular, pulmonary, renal and gastrointestinal function, including cellular, organ and system physiology. Laboratories include cadaver dissection and computer simulations. Prerequisite: BIO 331 with grade “C” or better, or with instructor consent.

BIO 333 Human Anatomy and Physiology III
(3-6-5)
The conclusion of the sequence in human anatomy and physiology. The discussion and examination of the endocrine and reproductive systems. Laboratories include cadaver dissection and computer simulations. Prerequisite: BIO 332 with grade “C” or better, or with instructor consent.

BIO 335 Cross-Sectional Anatomy
(3-0-3)
Cross-sectional anatomy correlated with computer tomography, ultrasonography and magnetic resonance imaging. Prerequisite: BIO 233.

BIO 336 Pathophysiology for the Radiologic Sciences
(3-0-3)
Study of dynamic aspects of disease process with emphasis on abnormal physiology. Understanding of the body’s normal lines of defense. Overview of common pathophysiologic mechanisms affecting the major organ systems of the body. Prerequisite: BIO 233.

BIO 337 Aquatic Ecology
(2-6-4)
Aquatic ecosystems, patterns of development, population dynamics, diversity and energy cycles in marine and freshwater communities. Local and extended one- or two-day field trips to study different ecosystems off-campus. Procedures for sampling, data collection, numerical modeling and simulation studies of aquatic pollutants. Prerequisites: BIO 212, BIO 327.

BIO 341 Medical Genetics
(3-0-3)
Principles of heredity, chromosome mechanisms and molecular genetics applied to disease processes in humans. Review of case histories of selected inherited disorders. Discussion of genetic intervention therapies. Prerequisite: BIO 213 or instructor consent.
BIO 342 Cell Biology
(3-3-4)
Organelle organization, protein sorting, cell signaling, cytoskeletal functions, cell division mechanics and cell interactions in development and aging. Prerequisites: BIO 213 or instructor consent.

BIO 345 Medical Microbiology
(4-3-5)
Mechanisms of pathogenicity and virulence relating to disease-causing viruses, bacteria, fungi and other microorganisms. Host-parasite relationships and immunology, microbial physiology and genetics. Laboratory procedures and identification of selected bacteria and parasites. Prerequisite: BIO 213.

BIO 346 Pathophysiology I
(3-0-3)
Study of the dynamic aspects of the disease process with emphasis on abnormal physiology. Detailed discussion of cellular alterations, inflammation, arteriosclerosis, cardiac and vascular diseases and neurology. Prerequisites: BIO 233 or BIO 331 with grade “C” or better, or instructor consent.

BIO 347 Pathophysiology II
(3-0-3)
Overview of normal immunology followed by immunologic abnormalities. Detailed discussion of neoplastic, endocrine and liver diseases and abnormalities of digestive, renal and muscular-skeletal systems. Prerequisites: BIO 346 or instructor consent.

BIO 407 Seminar
(Hours to be arranged each term.)

BIO 409 Current Research Topics in Medical Sciences II
(1-0-1)
A continuation of BIO 209 covering topics in medicine focusing on global health issues, infectious and chronic diseases. Projects in medical literature research, understanding scientific paper format, preparing technical presentations and public speaking. Prerequisite: BIO 209 or instructor consent.

BIO 426 Evolutionary Biology
(3-0-3)
Principles of evolutionary science, including speciation, biogeography, biodiversity, population genetics, natural selection and coevolution. Prerequisite: BIO 213 or instructor consent.

BIO 428 Animal Behavior
(3-0-3)
The biological foundations of animal behavior are presented from an ethological and comparative psychology perspective. Emphasizes the evolution, development and physiological basis of behavior patterns and presents topics on learning, perception, orientation, communication and social behavior. (Cannot be taken for graduation credit by students who have taken PSY 428.) Prerequisite: PSY 202 or BIO 213.

BIO 434 Data Analysis Methods
(3-3-4)
Fundamental principles of data analysis from field projects, data archives and other sources. Analysis of variance, hypothesis testing, random processes. Regression and times series analysis. Discussion and practice of data visualization and presentation techniques. Prerequisites: BIO 112, MATH 361.

BIO 436 Immunology
(3-3-4)
Cellular and humoral immunology including innate immunity, acquired immunity, antibodies, anatomy of immune response, production of effectors, adversarial strategies during infection, immunodeficiency and transplantation. Prerequisite: BIO 213 or instructor consent.

BIO 460, BIO 461, BIO 462 Human Cadaver Dissection
(0-3-1)
Study of human anatomy utilizing cadaver dissection. Attention will be given to three-dimensional relationships of structures, appreciation of textural differences and development of palpation skills. Recognition of pathologic abnormalities and individual variations will be investigated. Prerequisites: BIO 233 or BIO 333 and consent of instructor.

BIO 485 Klamath Bioregional Studies
(3-0-3)
The Klamath River Bioregion from an integrated ecological perspective. Team project in assessing current socioeconomic, cultural and ecological conditions in the bioregion and developing management strategies for sustainable resource use. Prerequisite: BIO 225 and BIO 327, or instructor consent.

BIO 495 Senior Project Proposal
(1-0-1)
Review of research procedures including research ethics, project management, instrumentation, field methods for data acquisition and data analysis. Identification of a research topic. Development and presentation of a research proposal. Corequisites: CHE 315, MATH 361.

BIO 496 Senior Project Data Collection
(1-6-3)
Independent completion of field, laboratory, or investigative project in collaboration with agency, faculty, or industry professionals. Includes data collection, initial analyses and presentation of initial findings. Prerequisite: BIO 495. Corequisite: BIO 434.

BIO 497 Senior Project Data Analysis
(0-3-1)
Application of appropriate statistical methods to data collected by students as part of their senior projects. Advanced techniques introduced as appropriate. Prerequisite: BIO 496.

BIO 498 Senior Project Presentation
(0-3-1)
Assessment and presentation of senior project data. Emphasis on the design, preparation and delivery of effective written and oral presentations in a multimedia environment. Prerequisite: BIO 497.

(BUS) Business

BUS 101 Introduction to Business
(3-0-3)
Business organization and business fundamentals. Coverage of the basic functions of management, marketing, production, accounting, finance and other business areas. Examination of economic, cultural, ethical and additional issues and trends affecting business.

BUS 207 Seminar
(Hours to be arranged each term.)

BUS 215 Principles of Management
(3-0-3)
Introduction to management organization in industrial and service organizations. Functional aspects of organizational history. Team concept management, corporate cultures and business ethics. (Cannot be taken for graduation credit by students who have taken BUS 304 or BUS 317.)
BUS 304 Engineering Management
(3-0-3)
The engineering management process. The unique aspects of managing “knowledge workers.” The manager’s role in planning, organizing, leading and controlling. Managing design and new products development, materials and inventory. Organizational styles, structures and policies. Human resource management for individuals and groups. (Cannot be taken for graduation credit by students who have taken BUS 215 or BUS 317.) Prerequisite: Junior standing or instructor consent.

BUS 305 Management of Engineering Resources
(3-0-3)
The financial side of engineering management. Product costing and pricing. Departmental planning, implementation and control systems. Measuring financial performance. Project investment decisions, project management and networks for projects. Management of the supply system, inventory and suppliers. The engineer's role in marketing. Prerequisite: Junior standing or instructor consent.

BUS 306 Principles of Marketing
(3-0-3)
Fundamentals of marketing. Product, price, promotion and place as basic concepts in modern marketing. Consumer behavior, competition, legal, ethics and other influences in the marketplace.

BUS 308 Principles of International Business
(3-0-3)
Introduction to various aspects of international business covering cultural, political, legal and economic environments, international trade theory, foreign investment strategies, negotiations, diplomacy, country selection and evaluation and human resource management.

BUS 309 Introduction to Tourism
(3-0-3)
Introduction to tourism industry. Topics include major components of tourism, service suppliers, travel, transportation, accommodations, food and beverage, attractions, entertainment, destinations and impacts of tourism on society.

BUS 314 Entrepreneurship
(3-0-3)
Identification and assessment of the critical factors that lead to a successful start-up. Focus on entrepreneurship, forms of ownership, researching a potential start-up business, profitability, financial needs and competition. Completion of a business plan for a proposed enterprise. Prerequisite: BUS 215, or BUS 304, or BUS 317; and BUS 321 or ACC 201.

BUS 316 Total Quality in Health Care
(3-0-3)
The health care quality management process, contemporary issues and trends involved with quality control, organization structures, policies, human factors and teamwork. Prerequisite: Junior standing.

BUS 317 Health Care Management
(3-0-3)
The health care manager’s role in planning, organizing, leading and controlling. Special emphasis on the unique and complex issues involved in health care management. Organizational structures. Strategic and operational planning. Health care finance and budgeting. The future of management. (Cannot be taken for graduation credit by students who have taken BUS 215 or BUS 304.) Prerequisite: Junior standing or instructor consent.

BUS 318 Consumer Behavior
(3-0-3)

BUS 319 Advertising Management
(3-0-3)
Advertising as a communications tool in marketing and business management. Evaluation and selection of advertising media. Preparation of layout and copy for sound advertising performance. Prerequisite: BUS 306.

BUS 321 Financial Accounting
(3-0-3)
Financial accounting in industrial and service organizations. Study of the basic accounting model, financial reporting, analysis and cash flow requirements. Emphasis on the accounting system as an information source.

BUS 322 Managerial Accounting
(3-0-3)
Accounting in support of management decisions. Manufacturing cost reporting, fixed/variable definition and cost variance analysis. Capital, cost and revenue budget preparation. The accounting system as a planning and control instrument. Prerequisite: ACC 201 or BUS 321.

BUS 325 Finance Management
(3-0-3)
Basic issues and methodology of financial management. Emphasis placed on working capital management, sources of short-term and long-term funds and optimal capitalization of the firm. Prerequisites: BUS 215; ACC 203 or BUS 322.

BUS 326 Sales and Sales Management
(3-0-3)
Principles, techniques and problems of personal selling. Analysis of customer needs. Customer contact, sales presentation, closing and post-sale services. Practice in sales preparation and demonstration and management of the salesforce. Prerequisite: BUS 306.

BUS 328 Health Care Accounting and Finance
(3-0-3)
Overview of economics of health care with an understanding of the general principles of accounting applied in the health care environment. Revenue sources, Diagnosis-Related Group (DRG) and Relative Value Unit (RVU) systems are examined. Various private, state and federal payers are examined. Issues such as cost effectiveness of prevention, management of patients and their diseases, as well as cost of treatment settings are discussed. Third party reimbursement from various sources, ranging from for-profit insurance carriers to charitable donations is reviewed. Prerequisite: Math 111.

BUS 331 Personal Finance
(3-0-3)
Introduction to the basic principles of personal financial planning and budgeting. Includes banking services, consumer credit, asset purchases, insurance and the fundamentals of investments and retirement planning.
BUS 335 Small Business Management
(3-0-3)
General management principles and business strategies for establishing and maintaining a small business. Using a business plan to develop operational strategies for starting a business and staying in business.
Prerequisites: BUS 215, BUS 304, or BUS 317; BUS 314.

BUS 337 Principles of Health Care Marketing
(3-0-3)
Fundamentals of Health Care Marketing covering strategy, planning process, assessment, marketing actions, branding and evaluation.

BUS 345 Fraud Examination
(3-0-3)
Study of fraud and fraud investigative techniques. Topics include nature of fraud, types of fraud, fraud prevention, detection and investigation methods and legal follow-up procedures.

BUS 349 Human Resource Management
(3-0-3)
The employment process, management development and training, wage and salary administration, preventive labor programs, safety, affirmative action, worker's compensation, grievance handling, job evaluation and job description analysis, employee services and programs.
Prerequisites: BUS 215 or BUS 304 or BUS 317.

BUS 350 Hospitality Management
(3-0-3)
Study of management principles in the tourism and hospitality industry. Topics include managing growth and change in the hospitality industry, major functional areas in hotels and restaurants and economic aspects of the industry. (Cannot be taken for graduation credit by students who have taken BUS 215, BUS 304 or BUS 317.)

BUS 355 Business Law
(3-0-3)
The fundamentals of business law: the structure of federal and state courts and agencies, their decision processes; the legal structure of modern business organizations including closely and publicly held corporations, partnerships, limited partnerships, nonprofit corporations, sole proprietorships and limited liability companies; contract law; Uniform Commercial Code; tort law and its implications for business; administrative law; and criminal law as it applies to business and industry.

BUS 358 Marketing for Hospitality and Tourism
(3-0-3)
Study of marketing principles as they apply to the tourism and hospitality industry. Topics include marketing in strategic planning, the marketing environment, marketing information systems and marketing research, consumer buying behavior, market segmentation, product pricing, distribution channels and internet marketing. (Cannot be taken for graduation credit by students who have taken BUS 399 Special Topics: Marketing Tourism.)

BUS 386 Real Estate Law
(3-0-3)
Agency relationships between client, brokers and salesman. Common real estate contractual problems. Fraud, misrepresentation and other ethical problems.

BUS 387 International Human Resource Management
(3-0-3)
In-depth review of human resource selection, training for international assignments, managing the expatriate manager, compensation packages, repatriation training, women and dual-career couples, conflicting interests of parent company and host country and managing joint ventures.
Prerequisite: BUS 308.

BUS 395 Industrial and Transportation Law
(3-0-3)
Problems in administrative law as they apply to the transportation industry. Problems under the Occupations Safety and Health Act and a review of the liabilities of manufacturers' and sellers' products.

BUS 397 Labor Relations
(3-0-3)
Industrial labor concepts including a study of wages, unemployment, organized labor, collective bargaining, union policies and methods, labor problems of employers and methods of seeking industrial peace.
Prerequisite: BUS 215 or instructor consent.

BUS 399 Marketing Special Topics
(3-0-3)
Concentrated areas of marketing will be taught on a rotating basis: business to business, hospitality and travel, enter-tainment and sports, high tech, direct marketing and public relations.
Prerequisite: BUS 306.

BUS 405 Reading and Conference
(Hours to be arranged each term.)

BUS 407 Seminar
(Hours to be arranged each term.)

BUS 414 Marketing Research
(3-0-3)
Introduction to the research function as it applies to marketing. Research methodology, design, surveys, data collection, interpretation and recommendations.
Prerequisites: MATH 361, WRI 227.

BUS 415 Environmental Regulation
(3-0-3)
Legislation and enforcement activities involving natural and industrial environments. Conservation laws, land use and planning, responsibilities of regulatory agencies, review of current legislative actions and judicial decisions.
Prerequisite: BIO 112 or BUS 355.

BUS 416 Environmental Management
(3-0-3)
Review of contemporary management issues and business practices related to land use management and planning, ecological planning, environmental quality engineering and control and natural resource economics.
Prerequisites: BUS 415 and ECO 201N or BIO 112.

BUS 434 New Product Development and Pricing
(3-0-3)
Prerequisite: BUS 306.

BUS 441 Leadership
(3-0-3)
Examination of leadership characteristics, models, roles and theories. Societal issues for leaders in the current global business environment. Understanding personal leadership style.
Prerequisite: BUS 215, BUS 304, or BUS 317; senior standing or instructor's consent.
BUS 445 Business Presentations  
(3-0-4)  
Design, preparation and delivery of effective business presentations. Emphasis on integration of skills in speech, written communications and desktop publishing in the development of executive presentations in the multimedia environment.  
Prerequisites: WRI 227.

BUS 447 Controversial Issues in Management  
(3-0-3)  
Examination of the many controversial issues in management such as social responsibility, whistle blowing, outsourcing, drug testing, Affirmative Action and so on. Students will study opposing views and arguments from a variety of viewpoints. Discussion and debate develops critical thinking skills.

BUS 456 Business Research Methods  
(3-0-3)  
Prerequisites: MIS 375, WRI 327.

BUS 458 Process Improvement  
(3-0-3)  
Prerequisite: IMGT 445 or MIS 312.

BUS 466 Marketing Policy  
(3-0-3)  
Planning and implementing the marketing strategy for competitive advantage. Role of analysis in strategy formulation, demand forecasting, resource allocation and ethics. Case analysis.  
Prerequisites: BUS 414 and senior standing.

BUS 467 Service Management  
(3-0-3)  
The nature of service and service encounters, strategy and competitiveness. Design of service systems. Facilities location, design and layout. Service quality and continuous improvement.  
Prerequisites: BUS 215, MATH 361.

BUS 473 Marketing Plan Development  
(3-0-3)  
Development of an in-depth marketing plan for a local community business. All aspects of the plan will be covered in detail.  
Prerequisite: BUS 306, BUS 319.

BUS 476 EDP Auditing and Controls  
(3-0-3)  
Computer methods for auditing and designing control in an electronic data processing environment. Concepts and procedures used to define controls and assess compliance with professional standards and management objectives.  
Prerequisites: BUS 322 and computer language.

(CHE) Chemistry

CHE 100 Consumer Chemistry  
(3-0-3)  
Designed to equip the consumer with some facility in dealing with our highly technological world. Topics of consumer interest are selected from the fields of Pharmacology, Exercise Physiology, Medicine, Nutrition and Food Chemistry. No chemistry or math background is required and course topics will be approached qualitatively rather than quantitatively. (Elective credit only, cannot be used as science elective.)

CHE 101 Elementary Chemistry  
(3-0-3)  
A brief presentation of introductory chemical concepts including atomic structure, the chemical equation, the behavior of gases, the chemistry of solution and acid-base chemistry. For students with good knowledge of algebra.  
Pre- or corequisite: MATH 100.  
Corequisite: CHE 104 (lab).

CHE 102 Elementary Chemistry  
(3-0-3)  
A continuation of CHE 101 with emphasis on organic chemistry. The role of organic chemistry in life and industrial processes is discussed.  
Prerequisite: CHE 101 or instructor consent.  
Corequisite: CHE 105 (lab).

CHE 103 Elementary Chemistry  
(3-0-3)  
A continuation of CHE 102 with emphasis on biochemistry. The organic chemistry of biochemicals including proteins, carbohydrates and fats, as well as nucleic acids is discussed. Basic elements of metabolism are also explored.  
Prerequisite: CHE 102 or instructor consent.  
Corequisite: CHE 106 (lab).

CHE 104 Elementary Chemistry Laboratory  
(0-3-1)  
Lab accompanying class content in CHE 101.  
Corequisite: CHE 101.

CHE 105 Elementary Chemistry Laboratory  
(0-3-1)  
Lab accompanying class content in CHE 102.  
Corequisite: CHE 102.

CHE 106 Elementary Chemistry Laboratory  
(0-3-1)  
Lab accompanying class content in CHE 103.  
Corequisite: CHE 103.

CHE 201 General Chemistry  
(3-0-3)  
A continuation of CHE 201. This course discusses the behavior of gases, liquids and solids, the properties of solutions, chemical kinetics and an introduction to chemical equilibrium.  
Prerequisite: CHE 201 and CHE 204 (lab).  
Corequisite: CHE 205 (lab).

CHE 202 General Chemistry  
(3-0-3)  
A continuation of CHE 201. This course discusses the behavior of gases, liquids and solids, the properties of solutions, chemical kinetics and an introduction to chemical equilibrium.  
Prerequisite: CHE 202 and CHE 205 (lab).  
Corequisite: CHE 206 (lab).

CHE 203 General Chemistry  
(3-0-3)  
A continuation of CHE 202. This course continues the discussion of chemical equilibrium and its applications in aqueous solutions including pH, buffers, solubility and complexation. Also included are oxidation-reduction processes and electrochemistry, thermodynamics and an introduction to nuclear chemistry.  
Prerequisite: CHE 202 and CHE 205 (lab).  
Corequisite: CHE 206 (lab).

CHE 204 General Chemistry Laboratory  
(0-3-1)  
Lab accompanying class content in CHE 201.  
Corequisite: CHE 201.

CHE 205 General Chemistry Laboratory  
(0-3-1)  
Lab accompanying class content in CHE 202.  
CHE 206 General Chemistry Laboratory
(0-3-1)
Lab accompanying class content in CHE 203. Corequisite: CHE 203.

CHE 207 Seminar
(Hours to be arranged each term.)

CHE 210 Clinical Pharmacology
(3-0-3)
The drug action of selected pharmaceuticals. Emphasis is placed on drug interactions, routes of administration and effects on body systems. Prerequisite: CHE 203, BIO 231, BIO 232.

CHE 211 General Chemistry
(4-3-5)
Components of matter, atomic and molecular structure, chemical bonding, stoichiometry, major classes of chemical reactions, gases and kinetic-molecular theory, thermo-chemistry and quantum theory and atomic structure. Prerequisite: CHE 101, high school chemistry or equivalent. Corequisite: MATH 111.

CHE 212 General Chemistry
(4-3-5)
A continuation of CHE 211. Models of chemical bonding, shape of molecules, theories of covalent bonding, liquids and solids, properties of mixtures, bonding and reactivity and chemical kinetics. Prerequisite: CHE 221.

CHE 213 General Chemistry
(4-3-5)

CHE 214 Streamwater Chemistry
(0-3-1)
Physical and chemical principles of freshwater systems, instrumental design and operating methods for measuring pH, dissolved oxygen, ammonia, nitrate, turbidity and conductivity. A five-week series of self-paced tutorials on CD followed by an extended, instructor-led laboratory to be conducted on a designated Saturday. Prerequisite: CHE 201 or CHE 221 or instructor consent.

CHE 215 Streamwater Sampling
(1-3-2)
Five week course introducing calibration and operational use of the Hydrolab multiprobe. Fundamental concepts in aquatic chemistry. Project planning, constraint assessment and measurement methodologies. Computer downloading and analysis of data. Prerequisite: CHE 231. Corequisite: BIO 112 or spreadsheet proficiency.

CHE 216 Clinical Pharmacology for Nuclear Medicine
(3-0-3)
The drug action of selected pharmaceuticals with emphasis on those drug families of particular importance in nuclear medicine and the biochemistry of the important radiopharmaceuticals. Prerequisites: BIO 231, BIO 232.

CHE 217 Electrochemistry for Renewable Energy Applications
(3-3-4) Development of electrochemistry concepts, including thermodynamics, reaction kinetics, charge transport and mass transport. Topics are presented in the context of fuel cells, electrolysis, electroplating and batteries. Also discussed, the chemistry of hydrogen; its properties, production, storage and transportation. Prerequisite: CHE 202 or CHE 222.

CHE 218 Environmental Chemistry and Toxicology
(3-0-3)
Mechanisms and toxicological effects of chemical reactions in water, soil and air. Global and regional concerns about atmospheric and marine contaminants, thermal pollution, pesticide and heavy metal disposal, radionuclides and effects on pollutants on living organisms. Organic nomenclature and selected biochemistry principles. Prerequisite: CHE 311 or instructor consent.

CHE 219 Soil Science
(3-3-4)
Nature, properties and distribution of soils and their relationship to the influence of vegetation, climate, landforms and human activity. Understanding how soils form and how and why they vary horizontally across the landscape and vertically with depth. Emphasis upon North American patterns. Required field trips and labs. Prerequisite: CHE 201 or instructor consent.

CHE 220 Organic Chemistry I
(3-3-4) The structures and reactions of carbon compounds with emphasis on thermodynamics, reaction pathways and spectroscopy. Prerequisite: CHE 223.

CHE 221 Organic Chemistry II
(3-3-4) Organic stereochemistry with emphasis on biologically important molecules. Prerequisite: CHE 331.

CHE 222 General Chemistry
(4-3-5)
Prerequisite: CHE 221. Models of chemical bonding, shape of molecules, theories of covalent bonding, liquids and solids, properties of mixtures, bonding and reactivity and chemical kinetics. Prerequisite: CHE 221.

CHE 223 General Chemistry
(4-3-5) A continuation of CHE 222. Emphasis on chemical equilibrium and its applications in aqueous solutions including acid-base, solubility and complexation reactions. Buffers, pH, thermodynamics, oxidation-reduction reactions, electrochemistry and nuclear reactions and their applications. Prerequisite: CHE 222.

CHE 224 Streamwater Chemistry
(0-3-1) Prerequisite: CHE 223. Prerequisites: BIO 231, BIO 232. Laboratory accompanying CHE 231. Providing practical experience with electrochemical equipment used to measure corrosion processes. Corequisite: CHE 345.

CHE 227 Seminar
(Hours to be arranged each term.)
CHE 450 Biochemistry I
(3-3-4)
Molecular and cellular biochemistry with emphasis on protein structure and function, DNA, RNA and analyzing, constructing and cloning DNA. Protein conformation and function, mechanisms of enzyme action and control. Prerequisites: BIO 213, CHE 332.

CHE 451 Biochemistry II
(3-3-4)
Molecular biochemistry with emphasis on biological membranes, membrane transport, muscle contraction and cell motility, hormone action, cell signaling, excitatable membranes and sensory system. Prerequisite: CHE 450.

CHE 452 Biochemistry III
(3-3-4)
Molecular and cellular biochemistry with emphasis on metabolism, glucose catabolism, glycogen metabolism, citric acid cycle, electron transport and oxidative phosphorylation, nucleic acid structure, DNA replication, repair and recombination, transcription and RNA processing. Prerequisite: CHE 451.

CHE 455 Water Quality Technology
(2-3-3)
Examination of water quality relative to surface, groundwater and industrial sources. Focus on laboratory and field procedures for detection, surveillance and abatement of water pollution. Prerequisites: ENV 325 and CHE 342, or instructor consent.

CHE 465 Fate and Transport of Pollutants
(3-3-4)
Mass balance. The use of equilibrium and chemical kinetics in the modeling of pollutant transport in water, soil and air. Mixing zone analysis, the use of Darcy’s law, flow nets and the Gaussian Plume approximation. Discussion, development and use of selected modeling scenarios. Prerequisites: CHE 223, MATH 252.

(CIV) Civil Engineering

CIV 101 Orientation to Engineering
(0-3-1)
Introduces student to the field of engineering with emphasis on civil engineering. Includes careers in engineering, engineering curriculum, the professional engineer and the successful engineering student. Incorporates team design project and requires use of word processing, Internet and e-mail protocols.

CIV 102 Basic Techniques in Engineering
(0-3-1)
Project-based study of various civil engineering graphical communication fundamentals, including basic sketching, lettering and drafting techniques, topographic map reading and analysis, plan and profile construction, use of scales. Continuation of the successful engineering student with introduction of time management practices and use of spreadsheets. Prerequisite: CIV 101 with grade “C” or better or instructor consent.

CIV 103 Freshman Design Experience
(0-3-1)
Fundamentals of engineering problem solving, with individual and team design problems of increasing complexity, culminating in a team design experience. Introduces study of engineering ethics and professional communication techniques, written and verbal. Prerequisite: CIV 102 with grade “C” or better or instructor consent.

CIV 112 Graphical Communication Techniques in Civil Engineering
(1-6-3)
Graphical communication in civil engineering using computer aided drafting software. Emphasis on 2D with introduction to 3D methodologies, using industry standard software. Includes development of drawings related to civil engineering projects such as roads, subdivisions and buildings, development of scaled plots and reading of engineering drawings.

CIV 207 Seminar
(Hours to be arranged each term.)

CIV 221 Engineering Geology
(2-3-3)
Study of physical geology fundamentals with emphasis on near surface processes and their impact on engineering practice and design. Focus is the solid earth, the hydrosphere and near-surfaces processes including geologic hazards. Prerequisite: MATH 251 with grade “C” or better or instructor consent.

CIV 223 Elementary Properties of Materials
(3-3-4)
Study of the engineering properties of soil and concrete. Development of proper field and laboratory testing methods for classifying and evaluating soil characteristics and principles of quality control. Testing and mixing concrete based on aggregate properties determined in the laboratory. Prerequisite: CIV 101 with grade “C” or better or instructor consent.

CIV 245 Surveying Applications
(1-6-3)
Study and application of surveying principles relative to route design including boundary surveys, map projections, remote sensing, coordinate geometry, horizontal and vertical alignment and earthwork calculations. Hand computations to develop theoretical understanding with emphasis on Land Development Desktop for design purposes. Prerequisites: CIV 112, GME 161 with grade “C” or better.

CIV 299 Independent Studies
(Hours to be arranged each term.)

CIV 315 Principles of Environmental Engineering
(4-0-4)
Environmental engineering calculations. Physical, chemical and biological elements of the natural environment. Environmental impacts of anthropogenic activities. Control and pollution prevention technologies. Legal and regulatory framework governing environmental management. Prerequisite: CHE 201 with grade “C” or better.

CIV 317 Economics for Civil Engineers
(3-0-3)
Economic analysis and evaluation of civil engineering projects. Economic evaluation from the perspective of the consulting engineer and contractor will be explored. Basic economic concepts such as equivalent worth, depreciation, taxes and statistical risk will be covered. Prerequisite: MATH 361 with grade “C” or better.

CIV 321 Soil Mechanics
(3-3-4)
Advanced soil topics in permeability and seepage, effective stress, consolidation and settlement, shear strength, lateral earth pressure, soil bearing capacity and slope stability. Laboratory tests include hydraulic conductivity, direct shear and unconfined compression. Prerequisites: CIV 223, ENGR 213 both with grade “C” or better.

CIV 322 Foundation Engineering
(3-0-3)
Analysis and design of shallow footings, deep foundations including piles, caissons and earth retaining structures. Advanced topics and computer applications in slope stability analysis. Prerequisite: CIV 321 with grade “C” or better.
CIV 328 Structural Analysis  
(3-3-4)  

CIV 331 Reinforced Concrete Design  
(3-3-4)  
Design and behavior of reinforced concrete members including beams, slabs, footings, retaining walls and shear walls with applications to simple structures. Lab includes construction and destructive testing of reinforced concrete beams. Prerequisite: CIV 328 with grade “C” or better.

CIV 344 Structural Steel Design  
(4-0-4)  
Design and behavior of structural steel members, including beams, tension members, columns and connections with applications to simple frames and structures. Computer applications also introduced. Prerequisite: CIV 328 with grade “C” or better.

CIV 358 Project Management  
(3-3-4)  
Basic project management principles and practices for engineering projects. Topics include basic management principles, delivery methods, bidding, procurement, costs, planning, scheduling, controlling and allocation of resources. Gantt charts, CPM and PERT discussed. Concepts applied using currently available computer software. Prerequisites: CIV 317 with grade “C” or better.

CIV 361 Water and Sewer Systems Design  
(3-3-4)  
Population and other factors influencing water supply demands, fire flows, peaking factors and storage requirements. Estimation of wastewater flows including I/I considerations. Open channel flow design applications. Wastewater collection system design, construction and maintenance. Flows in pressure pipe systems, pipe networks analysis and design techniques. Prerequisite: ENGR 231 with grade “C” or better.

CIV 362 Hydrology and Surface Water Management  
(3-3-4)  
Study of the hydrologic cycle, measurement of rainfall and runoff and streamflow measurements. Curve fitting, hydrographic analysis, statistical analyses of extreme flows, flood routing and storage capacity. Runoff modeling and design of overflow spillways, culverts and urban drainage systems. Prerequisites: GME 161, ENGR 211 both with grade “C” or better.

CIV 371 Introduction to Transportation Engineering  
(3-0-3)  
Introduction to the design, planning, operation, management and maintenance of transportation systems. Principles for planning multi-modal transportation systems, layout of highways, railroads and airports, traffic flow modeling and capacity analysis. Prerequisite: ENGR 211, GME 161 both with grade “C” or better.

CIV 375 Highway Engineering  
(3-3-4)  
Hot mixed asphalt materials testing and mixture design. Methods of manufacture, transport and placement of rigid and flexible pavements. Structural design of rigid and flexible pavements. Pavement rehabilitation and management. Prerequisites: CIV 223, ENGR 213 both with grade “C” or better.

CIV 401/COM 401 Civil Engineering Project I  
(4-6-6)  
First term of a two-term sequence integrating civil engineering design, group dynamics and technical communications. Students receive three credit hours in civil engineering design (CIV 401) and three credit hours in communication for general education (COM 401). Students will be introduced to a major civil engineering project, prepare a professional engineering proposal and function effectively in engineering design teams. Formal written proposal and oral presentation of the proposal are required. Prerequisite: Civil Engineering adviser consent.

CIV 402/COM 402 Civil Engineering Project II  
(4-6-6)  
Second term of a two-term sequence. Students receive three credit hours in civil engineering design (CIV 402) and three credit hours in communication for general education (COM 402). Student teams will perform work as defined in the Fall term proposal. Consultations with faculty, students and clients ensure work progresses toward stated goals. Term culminates with final design recommendations presented in a written report and oral presentation. Plans and specifications and a construction cost estimate will also be completed. Prerequisite: CIV 401/COM 401 both with grade “C” or better.

CIV 407 Seminar  
(Hours to be arranged each term.)

CIV 408 Workshop  
(Hours to be arranged each term.)

CIV 410 Basic Dynamics of Structures  
(3-0-3)  
Analysis of single degree of freedom structural systems to harmonic and general dynamic loading. Free vibrating and forced vibration of multiple degree of freedom systems, model superposition, earthquake engineering, current IBC methods. Prerequisite: CIV 328 with grade “C” or better.

CIV 415 Civil Design Software Applications  
(1-3-2)  
Advanced applications of civil engineering design software will be presented and applied to current year senior design project. Design components will include, at a minimum, site topography, layout of project roadways and parking lots, and layout of water, waste water and storm water lines. Corequisite: CIV 401/COM 401.

CIV 416 Structural Design for Lateral Loads  
(3-0-3)  
Wind and seismic forces on buildings according to the Uniform Building Code. Lateral force resisting systems for buildings. Software applications. Prerequisite: CIV 328 with grade “C” or better.

CIV 418 Structural Matrix Analysis  
(3-0-3)  
Static analysis of structures using flexibility and stiffness methods with strong emphasis on computer models and solutions for practical analysis problems. Prerequisite: CIV 328 with grade “C” or better.
CIV 435 Timber Design
(3-0-3)
Analysis and design of simple (determinate) timber beams, columns, trusses and connections using dimensioned lumber, plywood and laminated members. Computer applications introduced. Prerequisite: CIV 328 with grade “C” or better.

CIV 445 Design of Reinforced Masonry Structures
(3-0-3)
Analysis and design of masonry beams, walls and columns using computer solutions with emphasis on lateral design considerations. Prerequisite: CIV 328 with grade “C” or better.

CIV 451 Cost Analysis and Estimating
(2-3-3)
Accounting and forecasting labor, materials, and equipment costs for civil engineering projects. Includes interpretation of drawings, specifications and codes, construction techniques, methods of quantity take-offs, estimating and bidding procedures. Computer applications emphasized through spreadsheets and available computer software. Prerequisite: CIV 358 with grade “C” or better.

CIV 455 Construction Equipment
(3-0-3)
A study of construction planning, equipment, and methods. Topics to be included are an introduction to various equipment types, equipment specifications, methods of equipment production estimation, equipment owning and operating costs, and methods of operational analysis of equipment effectiveness. Prerequisite: CIV 358 with grade “C” or better.

CIV 464 Water and Wastewater Treatment Systems Design
(3-0-3)
Planning, design, construction and operation of water and wastewater management systems. Water quality and drinking water standards. Water treatment methods and residuals management. Water pollutants and receiving waters assimilative capacity. Wastewater treatment technologies and biosolids management. Prerequisites: CHE 202, CIV 315, ENGR 231, all with grade “C” or better.

CIV 466 Solid and Hazardous Waste Management
(3-0-3)
Sources and characteristics of solid and hazardous waste. Laws, regulations, methods and issues associated with the collection, treatment and disposal of solid wastes. Handling, tracking, storage, transportation, treatment, and disposal of hazardous wastes. Disposal site assessment and remediation techniques. Prerequisite: WRI 227 with grade “C” or better.

CIV 467 Groundwater
(3-0-3)
Offers an introduction to the physical properties and principles of groundwater. Topics will include groundwater and the hydrologic cycle, fundamental flow laws, groundwater resource evaluation, and groundwater contamination. Prerequisites: BIO 327, MATH 251 for non-majors. Corequisite: CIV 321 for Civil Engineering majors.

CIV 475 Traffic Engineering
(3-0-3)
Principles of traffic engineering and operation, traffic engineering studies, signalized intersection design, urban parking facility design and access management. Prerequisites: CIV 371, MATH 361 both with grade “C” or better.

CIV 476 Methods in Site Investigation
(2-3-3)
Requirements of site investigations for geotechnical and environmental engineering analysis. Review of methodologies used for site inquiry and analysis, with emphasis on non-invasive, geophysical and literature review techniques as well as field borings. Experience gained through design project(s). Prerequisite: CIV 221 with grade “C” or better. Corequisite: CIV 315.

CIV 499 Independent Studies
(Hours to be arranged each term.)

(CLSC) Clinical Laboratory Science

CLS 406 Biometry
(2)
Problem solving related to clinical laboratory determinations to include: solution preparation, systems of measurement, dilutions, factors, graphs and standard curves, and generation of laboratory results from raw data. Descriptive and inferential statistics related to clinical laboratory science and quality control to include: measures of central tendency, probability, distributions, hypothesis testing, confidence intervals, Z-scores, t-tests, chi-square, correlation and regression analysis, and ANOVA.

CLS 410 Clinical Microbiology I
(2)
Lecture course studying the major bacterial organisms pathogenic for man. Includes culture methods, morphological characteristics, isolation methods, and identification of these organisms. Discussion of the bacterial structures and processes, genetic determinants, normal flora, host-parasite relationships, sterilization techniques, epidemiological methods, antimicrobics, and principles of laboratory diagnosis of infectious diseases.

CLS 411 Clinical Microbiology II
(2)
Lecture course studying the major spirochetes, mycobacteria, actinomyces, chlamydia, rickettsia, fungi, and viral organisms pathogenic for man. Includes discussion of bacteria causing zoonotic diseases. Includes discussion of skin and wound infections, bone and joint infections, eye, ear, and sinus infections, dental and respiratory infections, enteric infections and food poisoning, urinary tract infections, central nervous system infections, intravascular infections, bacteremia, endotoxemia, infections of the fetus and newborn, sexually transmitted diseases, infections in the immunocompromised patient, nosocomial infections, and hospital infection control. Prerequisite: CLS 410.

CLS 412 Pathophysiology
(2)
Lecture course reviewing processes that underlie many different disease states and health deviations. The study of the most common disease processes in humans and their correlation with laboratory findings are explored.
CLS 415 Clinical Chemistry I

The theory, practical application and technical performance of chemical procedures. Fundamentals of quantitative chemical analysis in the determination of endogenous and exogenous substances in body fluids such as blood, urine, spinal fluid, amniotic fluid and ascites. Emphasis areas will encompass amino acids, proteins, carbohydrates, lipoproteins, lipids, enzymes, renal and liver functions analytes, GI function related analytes, electrolytes, trace elements, hemoglobin and porphyrins, and hormones, bone metabolism, nutrition, pregnancy and fetal development analytes, and geriatric considerations.

CLS 416 Clinical Chemistry II

The theory, practical application and technical performance of chemical procedures. Fundamentals of quantitative chemical analysis in the determination of endogenous and exogenous substances in body fluids such as blood, urine, spinal fluid, amniotic fluid and ascites. Emphasis areas will encompass therapeutic drug monitoring, toxicology, and method evaluation. Prerequisite: CLS 415.

CLS 419 Immunohematology

Emphasis on theory and laboratory techniques used in blood banking including blood typing, major blood group antigens and antibodies including their role in transfusion medicine, cross matching, and antibody identification. Current practices in blood donation, component therapy, and medical-legal aspects are also covered.

CLS 420 Clinical Immunology

Fundamentals of humoral and cellular immunity, to include innate and adaptive immunity, organs and tissues of the immune system, principles of immune activation, immunoglobulin and receptor biochemistry, immuno-genetics, cytokines, the complement system, white blood cell populations, and phagocytic mechanisms. Clinical applications to include protective immunity, immuno-deficiency conditions, inflammation, immune mediated diseases, neoplasms of the immune system, transplantation, and cancer immunology. An overview of immunoassay and serology testing formats.

CLS 441 Practicum: Instrumentation

Principles and applications of the instruments in use in the modern clinical laboratory. Basic principles of instrument operation for methods of detection, with emphasis on maintenance and safety. Instrumentation formats to include: spectrophotometry, electrochemistry, osmometry, electrophoresis, particle analysis, and measurement of radioactive decay.

CLS 442 Practicum: Hematology

Normal development and function of blood cells; mechanisms of hemostasis; basic pathophysiology of hematological and hemostasis disorders; laboratory procedures pertaining to hematology and hemostasis; microscopic examination of blood films; and correlation and interpretation of laboratory data for disease states.

CLS 443 Practicum: Transfusion Medicine

Coordinated lecture and laboratory practice. The principles of immunohematology as applied to Transfusion Medicine with special emphasis upon blood groups and types, techniques demonstrating antigen-antibody reactions; donor collection, processing, storage and hazards of transfusions, blood components and quality control are covered.

CLS 444 Practicum: Microbiology

Emphasis on clinical laboratory techniques. Methods include discussion, case histories, computer tutorials, hands-on exercises, demonstrations, problem solving, and interpretation of results. Includes study of the culture, morphological characteristics, serological methods, isolation and identification of bacterial organisms. Includes safety, specimen collection, microscopic methods, and anti-microbial susceptibility. Organisms include normal and pathogenic gram positive cocci, gram negative cocci, gram positive bacilli, gram negative bacilli, spirochetes, anaerobes, and related organisms with emphasis on organisms seen in a clinical laboratory. Includes discussion of chlamydia, mycoplasma, and rickettsiae.

CLS 445 Practicum: Mycology

Emphasis on clinical laboratory techniques. Methods include microscopy, discussion, case histories, computer tutorials, hands-on exercises, demonstrations, problem solving, and interpretation of results. Includes study of the culture and morphological characteristics of normal and pathogenic fungi and yeast with emphasis on organisms seen in a clinical laboratory.

CLS 446 Practicum: Parasitology

Emphasis on clinical laboratory techniques. Methods include microscopy, discussion, case histories, computer tutorials, hands-on exercises, demonstrations, problem solving, and interpretation of results. Includes study of normal and pathogenic parasitic organisms with emphasis on organisms seen in a clinical laboratory.

CLS 447 Practicum: Chemistry

Principles of chemical analysis, quality control, laboratory utilization, and safety. Hands-on exercises, demon-strations, and computer tutorials illustrating chemical analysis and data evaluation in a clinical chemistry laboratory. Discussion of case studies using problem-solving methods to analyze and interpret relevant chemical analysis data. Prerequisite: CLS 441 Co-requisite: CLS 415

CLS 448 Practicum: Immunology/ Infectious Serology

Techniques in immunologic and serologic procedures. Hands-on exercises, demonstrations, and computer tutorials illustrating immunoassay analysis and data evaluation in a clinical immunology and infectious serology laboratory. Discussion of immunoassay systems to include spectrophotometry, nephelometry, turbidimetry, fluorescence, electrochemiluminescence, radioassay, and flow cytometry, instruction and practice of testing methods and interpretation to include precipitation, agglutination, receptor-ligand, complement, microscopy, electrophoresis, and cell-mediated assays. Discussion of case studies using problem-solving methods to analyze and interpret relevant immunology and serology data. Prerequisites: CLS 420, CLS 441.

CLS 449 Practicum: Urinalysis

Study of urine with emphasis on urinalysis techniques, renal function, physical examination, chemical examination, microscopic examination, renal disease, and metabolic disorders. Methods include microscopy, discussion, case histories, computer tutorials, hands-on exercises, demonstrations, problem solving, and interpretation of results.
**CLS 452 Practicum: Advanced Hematology Techniques**

(2)
Microscopic examination of blood films and body fluids; instrumentation methodologies for analyzing cellular components of blood; analysis and interpretation of disease states.
Prerequisite: Completion of CLS 442 with grade “C” or better.

**CLS 453 Practicum: Advanced Transfusion Medicine Techniques**

(2)
Provides directed study, review and advanced problem solving and critical thinking related to Transfusion Medicine. May include, but not be limited to, discussion, case histories, computer tutorials, hands-on exercises, demonstrations, problem solving and interpretation of results.
Prerequisite: Completion of CLS 443 with grade “C” or better.

**CLS 454 Practicum: Advanced Microbiology Techniques**

(2)
Advanced techniques and review of microbiological organisms. Includes study of bacterial, fungal, and parasitic organisms and associated techniques. Methods include microscopy, discussion, case histories, computer tutorials, hands-on exercises, demonstrations, problem solving, and interpretation of results.
Prerequisites: CLS 410, CLS 411, CLS 444, CLS 445, and CLS 446.

**CLS 457 Practicum: Advanced Chemistry/Immunology Techniques**

(2)
Directed study, review, and demonstration of advanced methods and instruments in use in clinical or research laboratories. These may include, but not be limited to tissue typing, molecular methods, automated systems, flow cytometry, and chromatographic methods.
Prerequisites: CLS 447, CLS 448.

**CLS 459 Practicum: Advanced Urinalysis Technique**

(1)
Advanced techniques and review of urinalysis methods. Includes microscopy, discussion, case histories, computer tutorials, hands-on exercises, demonstrations, problem solving, and interpretation of results.

**CLS 461 Clinical Laboratory Management I**

(2)
Principles and fundamentals of management responsibilities: regulation and public financing of clinical laboratories; financial management—productivity, budgeting, cost accounting; information systems; quality assessment.

**CLS 462 Clinical Laboratory Management II**

(2)
Principles and fundamentals of supervision and management: communication, team building, recruitment, selection and training; employee performance; ethical considerations.
Prerequisite: CLS 461.

**CLS 463 Practicum: Clinical Laboratory Management III**

(1)
Applications of principles learned in CLS 461 and CLS 462 are studied using case studies, computer models, and projects.
Prerequisite: CLS 462.

**CLS 470 Clinical Laboratory Externship**

(16)
Sixteen weeks of clinical laboratory experience at an OIT approved clinical site correlating knowledge and skills presented in lectures and labs. Designed for the development of skills necessary for entry into professional practice. Students work under the direct supervision of certified clinical laboratory scientists.
Prerequisite: Successful completion of all academic course work in the Clinical Laboratory Science Program.

**COM) Communication**

**COM 101 Introduction to Interpersonal Communication**

(3-0-3)
An introduction to interpersonal communication theory and practice for Communication majors only. The course provides a foundation of interpersonal and interpersonal competencies.
Prerequisite: WRI 121 with grade "C" or better.

**COM 102 Introduction to Communication Theory**

(3-0-3)
An exploration of the basic theories and concepts of the communication discipline. Introduces students to the communication areas and theories they will encounter in further communication study.
Prerequisite: COM 101.
Pre-or corequisite: WRI 122.

**COM 103 Introduction to Communication Research**

(3-0-3)
An introduction to communication research. Focuses on finding, understanding, evaluating, and making the first steps towards producing communication research.
Prerequisite: COM 102.

**COM 115 Introduction to Mass Communication**

(3-0-3)
An introduction to mass media. Focus on the social, economic, and technological influences of the media, and increasing convergence of media and messages.

**COM 205 Intercultural Communication**

(3-0-3)
Introduces basic theories and concepts of intercultural communication. Builds understanding and skills enabling students to analyze intercultural interactions and develop and practice effective communication strategies. (Satisfies general education requirements in Communication or Humanities.)

**COM 207 Seminar**

(Hours to be arranged each term.)

**COM 215 Creativity in Communication**

(3-0-3)
Define and learn how personal and group creativity can be enhanced. Study the lives of creative individuals in the arts, sciences, and industry. Individual and group exercises designed to enhance the creative process.

**COM 216 Mastery of Grammar and Punctuation**

(3-0-3)
Involves learning basic and advanced grammar and punctuation through the mastery of sentence diagramming.

**COM 225 Interpersonal Communication**

(3-0-3)
Introduction to interpersonal communication theory and practice. Students apply course concepts to analyze and practice dyadic communication to develop more effective work and personal relationships.

**COM 226 Nonverbal Communication**

(3-0-3)
Nonlinguistic aspects of human communication. Examines the relationships between nonverbal and verbal communication behavior and nonverbal communication skill. Topics include space, distance, environment, touch, gesture, facial expression and gaze as communication.
Prerequisites: COM 101 or COM 225, SPE 111.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 237</td>
<td>Introduction to Visual Communication</td>
<td>(3-0-3)</td>
<td>Theory and rhetoric of visual communication. Variety of perspectives including personal, historical, technical, ethical, cultural and critical. Emphasis on relationships between form and content, word and image, and role of visual communication in society. Prerequisite: WRI 122.</td>
</tr>
<tr>
<td>COM 246</td>
<td>KTEC Radio Production</td>
<td>(3-0-3)</td>
<td>Study of technical and cultural aspects of radio. Through hands-on experience, students will learn how to create and edit sound tracks and learn techniques for creating radio presentations while applying rules of content and language.</td>
</tr>
<tr>
<td>COM 248</td>
<td>Digital Media Production</td>
<td>(2-3-3)</td>
<td>Study of the technical aspects of digital media design and production. Hands-on experience in creating and editing video and audio. Production of video and audio for specific contexts.</td>
</tr>
<tr>
<td>COM 255</td>
<td>Communication Ethics</td>
<td>(3-0-3)</td>
<td>Examines typical communication situations involving ethics. Methodologies for critically evaluating ethical situations. Reading, writing, and oral presentations. Prerequisite: WRI 122.</td>
</tr>
<tr>
<td>COM 256</td>
<td>Public Relations</td>
<td>(3-0-3)</td>
<td>Introduction to the history and practice of public relations. Emphasis on the practical accomplishment of public relations campaigns. Topics include internal and external audiences, brochures, press releases, internal documents, pitches, issue management, and project design and execution. Service learning course.</td>
</tr>
<tr>
<td>COM 276</td>
<td>Democracy and Media</td>
<td>(3-0-3)</td>
<td>Provides an introduction to the ownership and structure of media, as well as media’s politics, objectives, and links to the corporate and national economy. Includes project analysis of media through the filters of ownership, sourcing, flak, advertising and ideology. Prerequisites: WRI 227, COM 115.</td>
</tr>
<tr>
<td>COM 301</td>
<td>Rhetorical Theory and Application</td>
<td>(3-0-3)</td>
<td>Theories of communication and application to personal, business and industrial settings. Focuses on the evolution of rhetoric. Covers rhetorical effects on individual, group and mass communication. Prerequisites: SPE 111, WRI 227, or appropriate experience.</td>
</tr>
<tr>
<td>COM 320</td>
<td>Advanced Intercultural Communication</td>
<td>(3-0-3)</td>
<td>Builds on theories from COM 205. Focuses on analyzing intercultural interactions in specific work contexts, for example health care, education, social services, business and technology. (Satisfies general education requirements in Communication or Humanities.) Prerequisite: COM 205.</td>
</tr>
<tr>
<td>COM 326</td>
<td>Communication Research</td>
<td>(3-0-3)</td>
<td>Introduction to research methods and design. Design of both quantitative and qualitative research. Emphasis on communication based methodologies: focus groups, directed interviews, and ethnomet hodologies. Includes a research project and written and oral research reports. Pre- or corequisite: WRI 227.</td>
</tr>
<tr>
<td>COM 345</td>
<td>Organizational Communication I</td>
<td>(3-0-3)</td>
<td>Introduction to the study of communication in organizations, including message movement, exchange and interpretation, identification of variables, roles and patterns influencing communication in organizations.</td>
</tr>
<tr>
<td>COM 346</td>
<td>Health Communication</td>
<td>(3-0-3)</td>
<td>Overview of interpersonal, social and cultural issues in health communication, including family interaction, roles of patients and caregivers, communication in health organizations and the role of media. Prerequisites: WRI 122 with “C” or better; COM 205 or equivalent.</td>
</tr>
<tr>
<td>COM 347</td>
<td>Negotiation and Conflict Resolution</td>
<td>(3-0-3)</td>
<td>Theories and strategies for the conduct of conflict and negotiation across contexts. Topics include destructive conflict cycles, confronting and managing conflict, social and psychological aspects of conflict, conflict analysis, the causes of conflict, and promoting constructive conflict. Prerequisites: SPE 321, or instructor consent.</td>
</tr>
<tr>
<td>COM 348</td>
<td>Facilitation</td>
<td>(3-0-3)</td>
<td>Students lead small groups through deliberative processes including participatory decision making and conflict resolution. Provides theoretical and practical understanding of facilitation focusing on building skills in group leadership. Prerequisite: SPE 321.</td>
</tr>
<tr>
<td>COM 358</td>
<td>Communication and the Law</td>
<td>(3-0-3)</td>
<td>Issues involved in establishing legal parameters within which professional communicators work. Evolving interpretations of the first amendment, balancing conflicting first amendment claims, libel, limits of a free press, prior restraint, licensing and regulation. Prerequisites: SPE 111, WRI 227.</td>
</tr>
<tr>
<td>COM 365</td>
<td>Electronic Communication and Society</td>
<td>(3-0-3)</td>
<td>Explores the Internet as a mediator of human communication and its effect on society. Examines intrapersonal/interpersonal communication, entertainment/workplace contexts, and the convergence of technology as a global village. Prerequisite: WRI 227.</td>
</tr>
<tr>
<td>COM 401</td>
<td>Civil Engineering Project I</td>
<td>(4-6-6)</td>
<td>First term of a two-term sequence integrating civil engineering design, group dynamics and technical communications. Students receive three credit hours in civil engineering design (CIV 401) and three credit hours in communication for general education (COM 401). Students will be introduced to a major civil engineering project, prepare a professional engineering proposal and function effectively in engineering design teams. Formal written proposal and oral presentation of the proposal are required. Prerequisite: Civil Engineering adviser consent.</td>
</tr>
<tr>
<td>COM 402</td>
<td>Civil Engineering Project II</td>
<td>(4-6-6)</td>
<td>Second term of a two-term sequence. Students receive three credit hours in civil engineering design (CIV 402) and three credit hours in communication for general education (COM 402). Student teams will perform work as defined in the Fall term proposal. Consultations with faculty, students and clients ensure work progresses toward stated goals. Term culminates with final design recommendations presented in a written report and oral presentation. Plans and specifications and a construction cost estimate will also be completed. Prerequisite: COM 401/CIV 401 both with grade “C” or better.</td>
</tr>
<tr>
<td>COM 407</td>
<td>Seminar</td>
<td>(Hours to be arranged each term.)</td>
<td></td>
</tr>
</tbody>
</table>
COM 415 Developing Effective Multimedia-based Presentations  
(3-0-3)  
Interdisciplinary course introducing students to the tools and skills associated with designing, developing, presenting and disseminating state-of-the-art multimedia presentations. Hands-on experience with graphics, digital/audio/video animation and text. Prerequisites: CST 101 or equivalent, SPE 111 and WRI 227.

COM 420 Externship  
(Variable Credit 1-3)  
Students work in applied settings in their emphasis under the supervision of an on-site mentor. Regular contact with extern adviser. Written externship reports required. Prerequisite: Senior standing and permission of extern adviser.

COM 421 Senior Project I  
(3-0-3)  
First term of a three-term comprehensive sequence. Focus on developing a written proposal for a significant project in Communication Studies. Team projects permitted; interdisciplinary projects encouraged. Prerequisite: Senior standing.

COM 422 Senior Project II  
(3-0-3)  
Second term of a three-term comprehensive sequence. Focus on organizing and conducting a significant project in Communication Studies. Prerequisite: COM 421.

COM 423 Senior Project III  
(3-0-3)  
Third term of a three-term comprehensive sequence. Focus on completing and documenting a significant project in Communication Studies. Prerequisite: COM 422.

COM 425 Mediation  
(3-0-3)  
Prepares students to mediate in public and private settings. Covers conflict management strategies, processes and issues including gender and cultural awareness. Prerequisite: COM 225 or instructor consent.

(Variable Credit 1-3)  
Mediation practice and observation with experienced mediators through the Klamath Mediation Center. Students will progress from observation, to co-mediation, and finally, mediation of real disputes. Builds on the theoretical insights and practice of COM 425. Corequisite or Prerequisite: COM 425.

COM 437 Communication Training and Development  
(3-0-3)  
Prepares students to facilitate communication skills workshops and differentiate between organizational structure and communication training needs. Topics include audience analysis, learning theory, curriculum design, presentation skills, classroom dynamics and assessment. Prerequisite: SPE 321.

COM 445 Organizational Communication II  
(3-0-3)  
Examination of organizational communication systems and the design of communication audit procedures. Synoptic reports of findings and recommendations. Prerequisite: COM 245 or instructor consent.

(CST) Computer Systems Engineering Technology

CST 101 Introduction to Personal Computing  
(3-3-4)  
Computer concepts, terms and trends related to personal computers (microcomputers). Introduction to Windows/NT and other commonly used Windows application programs. Hands-on labs provide experience with applications, networks and the Internet using e-mail and the World Wide Web.

CST 102 Introduction to Computer Systems  
(2-3-3)  
Concepts, terms, and trends related to the computer engineering technology (hardware) and software engineering technology (software) curriculums. Includes discussions on fundamental aspects of the computer field. Laboratory component will introduce students to micro-computers, programming concepts and various computer/engineering related software. Prerequisite: CSET major or instructor consent.

CST 103, CST 104, CST 105 Introduction to Computer Systems I, II, III  
(1-3-2) (0-3-1) (0-3-1)  
Concepts, terms and trends related to computer engineering technology (hardware) and software engineering technology (software) curriculum. Includes discussions on fundamental aspects of the computer field. Laboratory component will introduce students to microcomputers, programming concepts and various computer engineering related software.

CST 116 C++ Programming I  
(3-3-4)  
Computer concepts and problem solving methods using C++ programming language. Topics include: algorithms, simple data types, conditional and iterative structures, function definition, structured programming and documentation. Cannot be taken for graduation credit if student has completed MIS 116. Prerequisite: CST 126 with grade “C” or better.

CST 123 Topics in Computer Science  
(3-0-3)  
Overview of various software engineering subject areas. Topics include computer history, operating systems, networking, software engineering, databases, software careers, and various application areas. Also examines ethical and social issues raised by widespread use of computers. Prerequisite: CST 126 with grade “C” or better.

CST 126 C++ Programming II  
(3-3-4)  
Solving complex problems using advanced features of the C++ language. Topics include function usage, pointer data type, dynamic memory allocation, string manipulation, and structure and union data types. Emphasis is on structured program design techniques. Cannot be taken for graduation credit if student has completed MIS 126. Prerequisite: CST 116, with grade “C” or better.

CST 130 Computer Organization  
(3-0-3)  
Introduces computer elements, organization, and instruction sets, computer arithmetic, ALU, Registers, Datapath, memory and Control unit functions. Prerequisite: CST 162 with grade “C” or better.

CST 131 Computer Architecture  
(3-0-3)  
Continuation of CST 130. Topics include main memory, cache, virtual memory, memory management, secondary storage, networks, operating system functions, and pipelining. Prerequisite: CST 130 with grade “C” or better.
CST 133 Digital Electronics II – Sequential Logic with HDL  
(3-3-4)
Introduction to Sequential Logic, Latches, Flip/Flops, Timers, Counters/Registers, HDL Implementation, PLD HW Implementation, Finite State Machine Design/Analysis, Logic Testing, MPU System, Memory Devices, DC Parameters and Timing Analysis. Laboratory integral to the class. Students must register for a laboratory section.  
Prerequisite: EE 131 or CST 162, both with grade “C” or better.

CST 136 Object-Oriented Programming with C++  
(3-3-4)
A study of object oriented programming with C++. Beginning and intermediate concepts are covered including classes, objects, member functions, overloading, inheritance, polymorphism, templates, and virtual functions. This course prepares students with a strong C background for upper-division coursework using C++. Cannot be taken for graduation credit if student has completed MIS 136.  
Prerequisite: CST 126, with grade “C” or better.

CST 141 Computer Programming (FORTRAN)  
(3-3-4)
Computer concepts and problem solving methods using the FORTRAN programming language. Topics include: algorithms, simple data types, conditional and iterative structures, subprograms, structured programming and documentation.  
Prerequisite: MATH 111.

CST 162 Introduction to Digital Logic  
(3-3-4)
Introduction to combinational logic. Includes introduction to DC circuits, number systems, Boolean algebra, logic gates, Mixes, Decoders, Adders, Subtracters. Logic design using a hardware description language. Laboratory integral to the class.  
Pre- or Corequisite: MATH 100.

CST 204 Introduction to Microcontrollers  
(3-3-4)
An introduction to microcontrollers (uC). Signals and data flow within simple systems. Introduction to instruction set, software development tools and I/O techniques, both programmed and interrupt-driven. Experiments using uC plus external circuits in applications.  
Prerequisites: CST 131, CST 162, CST 250, each with grade “C” or better, or instructor consent.

CST 207 Seminar  
(Hours to be arranged each term.)

CST 211 Data Structures  
(3-3-4)
Discussion of efficient methods of data representation such as stacks, queues, linked-lists, binary trees, B-trees. Emphasis is on data representation and algorithm analysis.  
Prerequisite: CST 136 with grade “C” or better.

CST 223 Concepts of Programming Languages  
(3-0-3)
Study of principles and fundamental concepts characterizing high-level programming languages, including history and survey of programming paradigms, syntax and semantic rules, data types, control flow and data abstraction.  
Prerequisite: CST 126 with grade “C” or better.

CST 229 Introduction to Grammars  
(3-0-3)
The concepts involving alphabet words and languages will be discussed. Related topics in automata and regular expression will be explored. Emphasis is on context free grammars, parse tree and parsing techniques.  
Prerequisites: CST 211, CST 223.

CST 231 Computer Design with Programmable Logic  
(3-0-3)
This class introduces students to structured digital design techniques using programmable logic devices. The course investigates concepts, terminology and techniques used to design and implement programmable logic devices. Both software tools (synthesis tools) and programmable hardware applications will be provided to demonstrate the capabilities of programmable devices.  
Prerequisite: CST 262. Corequisite: CST 232.

CST 232 Computer Design with Programmable Logic Laboratory  
(0-3-1)
Laboratory experiments to support CST 231. Experiments with programmable logic devices including simulation.  
Prerequisite: CST 262. Corequisite: CST 231.

CST 236 Software Systems Testing  
(3-3-4)
Focus on software testing and reliably monitoring the health of software development. Topics include test driven development, story driven tests, unit tests, Web tests, load tests, static code analysis and dynamic code analysis.  
Prerequisite: CST 136 with grade “C” or better.

CST 238 Graphical User Interface Programming  
(3-3-4)
Introduction to Windows based programming. Topics covered include a review of the standard user interface elements of Windows, the Windows Application Program Interface (API), message processing, writing Windows Procedures, working with text, using Windows resources, creating modal and modeless dialog boxes, and using the Graphics Device Interface.  
Prerequisite: CST 211 with grade “C” or better.

CST 240 UNIX  
(2-3-3)
Students will study the structure of the UNIX/Linux Operating System, including: file structure, input/output processing, commands and utilities, shell configuration, communications, and script programming languages. Emphasis will be placed on lab work done within the UNIX/Linux environment.  
Prerequisite: CST 126 with grade “C” or better.

CST 250 Computer Assembly Language  
(3-3-4)
Concepts of assembly language programming applied to a modern computer; data and instruction formats, address generation; data definition, storage allocation and program control statements; sub-routine library; CPU instruction set; control records; and writing of sub-routines.  
Prerequisites: CST 126 and CST 131 with grade “C” or better.

CST 260 Advanced Assembly Language Programming  
(3-3-4)
Advanced applications of assembly language programming such as: interrupt handling, writing drivers involving bus interface devices, graphic applications, and interfacing with high level languages. Software projects will be developed on Intel 80XXX family of processors.  
Prerequisite: CST 250, with grade “C” or better, or instructor consent.

CST 262 Digital Design Using HDL  
(3-3-4)
Advanced digital circuit design. HDL is used in designing sequential logic circuits such as registers, counters, and synchronous finite state machines. Basic digital circuit design and analysis with semiconductor devices is also covered. Laboratory is integral to the class.  
Prerequisite: CST 162 with grade “C” or better, EET 101, EET 102.
CST 276 Software Design Patterns  
(3-3-4)  
Design patterns establish a common terminology allowing developers to use a common vocabulary and share a common viewpoint of the problem. Design patterns provide a common point of reference during the analysis and design phase of a project.  
Prerequisite: CST 211 with grade “C” or better.

CST 295 Individual Studies  
(Hours to be arranged each term.)

CST 298 Reading and Conference  
(Hours to be arranged each term.)

CST 299 Laboratory Practice  
(Hours to be arranged each term.)

CST 311 Advanced Data Structures and Algorithm Analysis  
(3-1-3)  
Discussion and implementation of advanced data structures like K-way trees and sets. Analysis techniques of computer algorithms with respect to their time and space complexity. Emphasis will be placed on implementation of algorithms and analyzing their performance in various environments.  
Prerequisite: CST 211.

CST 313 Computer Software Techniques  
(3-0-3)  
Lectures are divided between data structures and operating systems. Data structures section involves data representation, B-trees, graphs, and files. Operating systems section involves process, memory, and file management as related to UNIX. Cannot be taken for graduation credit if student has completed MIS 315.  
Prerequisite: CST 126 with grade “C” or better.

CST 315 Embedded Sensor Interfacing and IO  
(3-3-4)  
Introduction to Data Acquisition Systems. Sampling Theory, ADC, DAC, Signal Conditioning, Filters, Amplifiers, Noise, Transducers and sensors, including Bio-sensors. Sensor Interfacing, Smart Sensors, and Busses. Lab integral to course.  
Prerequisites: EET 237, EET 238, CST 204.

CST 316 Software Process Management  
(3-3-4)  
In this first term of a three-term sequence, students will work in teams to gather requirements, model, analyze, develop and integrate an n-tiered architecture software product. Students will learn about project management, software development lifecycle tools and processes, and quality assurance processes.  
Prerequisite: CST 211 with grade “C” or better.

CST 320 Compiler Methods  
(3-3-4)  
Basic concepts of compiler design and operation. Topics include lexical and syntactical analysis, parsing, translation, data flow analysis and code generation, and implementation of a small compiler.  
Prerequisite: CST 229.

CST 321 Introduction to Microprocessors  
(3-6-5)  
Hardware and assembly level software needed to interface a microprocessor to I/O ports, memory and interrupt sources. Topics include bus controller design, timing analysis, programmed I/O and interrupts. Extensive lab provides experience with system design, test and debugging using the 80386DX microprocessor.  
Prerequisites: CST 204 and CST 231, with grade “C” or better, or instructor consent.

CST 324 Database Systems and Design  
(3-3-4)  
An overview of Data Base Management Systems including requirements analysis methodology for data base design, conceptual DB design methodology including formulation of entity-relationship models, review of query language characteristics, and a comparison of commonly available DBMS.  
Prerequisite: CST 211 with grade “C” or better.

CST 326, CST 336 Software Design and Implementation I, II  
(3-3-4)  
In this second and third terms of a three-term sequence, students will work in teams to gather requirements, model, analyze, develop and integrate an n-tiered architecture software product. Students will learn about project management, software development lifecycle tools and processes, and quality assurance processes.  
Prerequisite: CST 316.  
Pre- or corequisites: CST 238, CST 324.

CST 328 Computer Graphics  
(2-3-3)  
Advanced algorithms and techniques are presented, including: 3-D modeling and rendering, perspective projection, hidden line/surface removal, curve/surface modeling and various lighting models. The OpenGL library will be used extensively.  
Prerequisite: CST 238, MATH 341 or instructor consent.

CST 331 Microprocessor Peripheral Interfaces  
(3-6-5)  
Extension of concepts covered in CST 321 including additional peripheral devices to expand the microprocessor’s capabilities and to create a complete system. Introduces additional I/O techniques including Interrupt driven I/O and DMA. Extensive lab provides continued experience with system design, test and debugging techniques.  
Prerequisite: CST 321 or instructor consent.

CST 334 Project Proposal  
(1-0-1)  
Description of senior project; time management techniques; task assignment; development of in-depth senior project proposal and preparation of formal senior project. Includes use of PC-based planning.  
Corequisites: Hardware: CST 373; Software: CST 336.

CST 335 I/O Device Interfacing Techniques  
(3-3-4)  
Application of opto-couplers, peripheral drivers, A-D converters, and operational amplifiers to microprocessor/microcontroller based applications. Survey of transducer theory and available devices. An embedded system is used as a development platform in laboratory experiments.  
Prerequisites: CST 204, CST 262, EET 237, or instructor consent.

CST 337 Embedded System Architecture  
(3-3-4)  
Architectural elements of embedded systems – microprocessor, memory, I/O ports, interrupt controller, buffers; interface protocol and timing; external interfaces; external busses including USB, PCI and Ethernet. I/O methods, Configuration, programming, testing and debugging of embedded systems. Embedded system expansion. Includes lab.  
Prerequisite: CST 204 with grade “C” or better.

CST 338 Computer Modeling and Simulation  
(3-0-3)  
Modeling and simulation of discrete and continuous systems. Discrete time and discrete event simulation models will be discussed and developed. Formal model development and model evaluation will be discussed.  
Prerequisites: CST 126, CST 211, MATH 465.
CST 340 Advanced UNIX

(3-0-3)

Advanced facets of the UNIX operating system will be explored. Topics of study will include: interprocess communication, programming, system administration. Students will use OIT computers operating under UNIX. Prerequisite: CST 240.

CST 341 Microcontrollers and Embedded Systems

(3-3-4)

Focus on microcontrollers and embedded systems, using the 8051 and the 68HC11 devices as examples. Application of theory to several projects. Laboratory work is integral to the course. Prerequisite: CST 331.

CST 344 Intermediate Computer Architecture

(3-0-3)

Register level design of a computer system, including the processor and memory structures. Cache and virtual memory. Includes analysis of both CISC (Complex Instruction Set Computer) and RISC (Reduced Instruction Set Computer) architectures. Prerequisite: CST 204.

CST 345 Hardware/Software Co-Design

(3-3-4)

Co-design of hardware and software systems. Methods used in the development of embedded systems consisting of tightly coupled hardware and software components. Prerequisites: CST 204 and CST 211 with grade "C" or better.

CST 346 .NET Programming in C#

(2-3-3)

Essentials of programming using the C# language. It emphasizes C# programming structure, syntax, design, and implementation essentials, as well as a brief overview of the .NET framework. Creating Windows Forms and accessing ADO.NET are also examined. Prerequisite: CST 211 or CST 313.

CST 347 Real-Time Embedded Operating Systems

(3-3-4)

OS Kernel Constructs and Problem Scaling, Small Scale Environment Specification, Process, Threads, Fibers, Synchronization Primitives, Small Scale Memory Management, Scheduling Paradigms, Real-Time Scheduling, I/O and Debugging, Lab integral to course. Prerequisites: CST 211, CST 240, both with grade "C" or better.

CST 350 Introduction to VLSI Design

(2-3-3)

An introduction to the various aspects of Very Large Scale Integration circuits. Includes modern design techniques using CAD/CAE software tools, Design using Standard Cell techniques, discussion of full custom design and VLSI testing concepts. Demonstrations are included to supplement lectures. The course will include laboratory experience. Prerequisites: CST 231, CST 232, EET 308, PHY 222, or instructor consent.

CST 351 Advanced PLD Circuits

(2-3-3)

Study of complex PLDs (CPLDs) and other more advanced PLD architectures and related applications. Laboratory includes design capture, synthesis, placement and routing tools to implement several designs. Prerequisites: CST 231, CST 232.

CST 352 Operating Systems

(3-3-4)

Issues in Operating Systems Design. Topics include: processes, threads and fibers, privilege modes, preemptive multitasking, process state machine, scheduling paradigms, system calls/traps, shared resources and synchronization primitives, memory management schemes/virtual memory, deadlock detection, handling, and avoidance, I/O and management. Prerequisite: CST 211, CST 240 both with grade "C" or better.

CST 356 Web Design and Development

(2-3-3)

Basic components of Web development which include aspects of design as well as current development technologies. Development technologies include, but are not limited to, HTML/XHTML, JavaScript, and CSS. Other technologies discussed may include Java Applets, CGI programming, ASP.NET and PHP. Prerequisite: CST 211 or CST 313.

CST 371, CST 372, CST 373 Embedded Systems Development I, II, III

371 (3-3-4), 372 (2-3-3), 373 (1-3-2)

A three-term sequence covering design, implementation, test and documentation techniques used for embedded computer systems. Each student is required to work on and complete a project as a member of a team. The entire sequence must be completed in three consecutive terms. Prerequisites: CST 211 or CST 313; CST 204 or instructor consent.

CST 379, CST 490 Co-op Field Practice

(Variable Credit)

An approved work program related to the student's field of specialization for a continuous three-month or six-month period. The employer and the type, level, and difficulty of the particular job must be approved by the student's engineering technology department prior to the employment period. A written comprehensive report of each season's activity must be submitted during the following term of residence. Prerequisites: Associate degree and two terms of residence.

CST 405 Directed Study

(3-0-3)

Advanced study under the guidance of faculty. Topics and learning objectives arranged between students and instructor. Students will meet with instructor weekly to discuss progress and provide evidence of their performance. Prerequisite: Junior standing in CSET and instructor consent.

CST 407 Seminar

(Hours to be arranged each term.)

CST 408 Workshop

(Hours to be arranged each term.)

CST 412, CST 422, CST 432 Senior Development Project

412 and 422 (2-5-3), 432 (1-3-2)

A three-term sequence giving the student major responsibility for planning and carrying out a computer-oriented project. Individual creativity will be encouraged by allowing the student to select an appropriate project. Prerequisite: CST 336.

CST 415 Computer Networks

(3-1-4)

Current issues in computer networks and distributed systems. Topics include network protocols, interface standards, and transmission modes. Network layers detailing Internet Protocol Suite and correlations with 7 layer abstract communication model. Routing and WAN Architectures. Prerequisite: CST 336 with grade "C" or better.

CST 417 Embedded Networking

(3-3-4)

CST 418 Data Communications and Networks
(3-0-3)
Provides students with an introduction to data communications and computer networks. Students acquire knowledge of communications components and their use in implementing a network. Emphasis is on the practical aspects of network configuration, operations, and detection, isolation and correction of problems. Prerequisite: CST 331 or instructor consent.

CST 420 Effective C++ and STL
(2-3-3)
Emphasis is on techniques to apply the C++ language and library effectively toward the implementation of object-oriented systems. Specific ways to improve design and program will be covered as well as purpose and use of the C++ Standard Library. Prerequisite: CST 320 or instructor consent.

CST 423 Advanced Business Systems Programming
(3-0-3)
Emphasis is on structured analysis, design and programming, interactive programming, use of utilities/libraries, and integration of a high level language with a DBMS. Prerequisite: Junior standing in CSET.

CST 425 Advanced Networks and Telecommunications
(3-0-3)
Detailed analysis of communications networks, including telephony, wide area, and local area implementations. Emphasis will be placed on the design and management of complex networks. Opportunity will be provided to work with existing networks. Prerequisite: CST 415.

CST 426 Introduction to Artificial Intelligence
(3-0-3)
Concepts and techniques of AI with considerable use of the LISP interpreter. Includes discussion of “search” methods, knowledge representation, natural language processing, models of cognition, vision, and “The Blocks World.”

CST 435 Microprogramming
(3-0-3)
The concepts and methods involved in programming the computer’s control unit. Coverage includes a review of computer organization, microprogram operations such as floating point arithmetic, translator/simulator development, and emulation techniques. Prerequisite: Software Engineering Technology senior standing, or instructor consent.

CST 436 Robotics
(3-0-3)
Robot models in the abstract and as practical laboratory problems. Models will be constructed using LISP and the student will be encouraged to design and build at least “an arm and hand” in the “Blocks World” as a laboratory assignment. Additional studies of applications-oriented AI research in other fields such as chemistry, medicine, and education.

CST 440 Seminars in Information Systems
(3-0-3)
Advanced studies in areas related to current developments and trends in computer systems. Topics include examining emerging technologies, ethics, security, privacy, productivity improvement methodologies and tools, computer system reviews and audits, and professional development. Prerequisite: Senior standing in CSET.

CST 441 Logic Synthesis with VHDL
(2-3-3)
This course will show students how to use the hardware description language, VHDL, with hierarchical design techniques to manage a complex design. In this process, students will create a design using the VHDL modeling tools, simulate the design using advanced simulation techniques, synthesize and test the design. Laboratory integral with the course. Prerequisite: CST 351 or instructor consent.

CST 442 Advanced Computer Architecture
(3-0-3)
Advanced concepts in computer architectures including pipelined, superpipelined, superscalar, and dynamically pipelined processor architectures, Parallel processors, Multiprocessors, Cache and Cache coherence. Prerequisite: CST 344 or instructor consent.

CST 445 Advanced Microprocessors and Applications
(3-3-4)
This class examines the architecture of the Motorola 680X0 microprocessor family. The course investigates advanced design techniques used in developing interfaces to the 680X0 microprocessor family, along with the use of coprocessors and special device controllers. Advanced design concepts in both software and hardware will be examined. Prerequisite: CST 331 or instructor consent.

CST 451 ASIC Design using FPGAs
(3-3-4)
FPGA senior project design specifications; presentation of the project in a design review to peers; application of formal hardware/software design techniques when designing with FPGAs; and verification of FPGAs. Prerequisite: CST 441 or instructor consent.

CST 455 System On a Chip Design
(3-3-4)

CST 456 Embedded System Testing
(3-3-4)

CST 461 Advanced Topics in VLSI Design
(2-3-3)
Conclusion of a three-course sequence in Very Large Scale Integration design. This course focuses on testing methodology, especially boundary scan. In addition, an alternative synthesis tool is introduced. Current issues in VLSI design are discussed. Laboratory experiments form an essential part of the course. Prerequisite: CST 451.

CST 462 Real-Time Operating Systems
(2-3-3)
Topics in real-time operating systems analysis and design. Hard versus soft real-time systems. Scheduling paradigms and algorithms. Analysis of systems and processes. Real-time system modeling and time prediction. Prerequisite: CST 352 with grade “C” or better.

CST 464 RISC-Based Microprocessor Systems
(3-3-4)
RISC architecture and applications. Includes i960 microprocessor features, instruction set, and i960 support software. Laboratory focus on applications. Prerequisites: CST 331, CST 344.
CST 465 Web Development with ASP.NET
(2-3-3)
Dynamic Web site creation and development strategies using ASP.NET are discussed and practiced. Focus on the importance of databases in the creation of a dynamic Web site is heavily emphasized.
Pre- or corequisites: CST 324 and CST 365 or instructor consent.

CST 466 Embedded System Security
(3-0-3)
Fundamental theories and applications of cryptography relevant to computer and embedded system security.
Prerequisites: CST 126, Math 112.

(DH) Dental Hygiene

DH 100 Introduction to Dental Hygiene I
(0-3-1)
Orientation to the theory and practice of all aspects of the dental hygiene profession. The history of dental hygiene, professional organization and career opportunities are discussed.

DH 101 Introduction to Dental Hygiene II
(0-3-1)
Hands-on activities involving the procedures and skills learned in DH 100. Students will practice basic dental hygiene skills. Opportunities to experience normal oral anatomy.
Prerequisite: DH 100.

DH 207 Seminar
(Hours to be arranged each term.)
Review, discussion, evaluation, and problem solving of the students' clinical experience.

DH 221, DH 222, DH 223 Dental Hygiene Clinical Practice and Seminar I, II, III
(221-F)(2-6-4)(222-W)(2-6-4)(223-S)(1-6-3)
Sequential courses designed to provide clinical skills essential for the practice of dental hygiene. Skill development of patient appraisal, basic instrumentation, and individualized preventive care emphasized. Special emphasis on children up to 12 years old.
Prerequisite: For DH 221-Admission to Dental Hygiene Program.
Prerequisite: For DH 222–DH 221.
Prerequisite: For DH 223–DH 222.

DH 226 Head and Neck Anatomy
(2-0-2)
Head and neck anatomy correlated with clinical considerations for the dental hygienist. Anatomical nomenclature, primary and permanent dentitions, skeletal system, muscular system, head and neck structures, vascular system, nervous system, lymphatics, fascia and spaces, and spread of dental infection.
Prerequisite: Admission in to the Dental Hygiene Program.

DH 237 Oral Histology and Embryology
(2-0-2)
Oral histology and embryology correlated with clinical considerations for the dental hygienists. Development periods, development of oral tissues and hard and soft structures and histology of oral pathologies. Cell pathology, inflammation, immune response, neoplasia, traumatic lesions, inflammatory lesions, oral diseases with autoimmune components, and neoplasia. Descriptive terminology and differential diagnosis will be introduced.
Prerequisite: DH 237.

DH 240 Prevention I
(3-0-3)
Psychological theories pertaining to patient care. General nutrition and its impact on dental health. Understanding the body's need for protein, carbohydrates, fats, and relation to general health.
Prerequisite: Admission to the Dental Hygiene Program.
Corequisite: DH 221.

DH 241 Prevention II
(3-0-3)
Cariology, remineralization, fluorides, nutrition, xerostomia, oral physiotherapy aids, plaque, calculus, computerized dietary analysis, and counseling techniques. Healthcare for the provider is recognized as a part of holistic healthcare.
Prerequisite: DH 240.

DH 242 Prevention III
(3-0-3)
Preventive needs of infants through sixth grade. Sealants, early childhood caries, occlusion and nutrition, and management of this age group are considered. Healthcare for the provider is continued.
Prerequisite: DH 241.

DH 244 General and Oral Pathology
(3-0-3)
Introduction to general pathology and common oral pathologies. Cell pathology, inflammation, immunity, neoplasia, traumatic lesions, inflammatory lesions, oral diseases with autoimmune components, and neoplasia. Descriptive terminology and differential diagnosis will be introduced.
Prerequisite: DH 237.

DH 252 Oral Radiology I
(2-3-3)
Theoretical background and practical application of dental radiography. Exposure techniques, processing, mounting, and evaluation of dental radiographs: physical principles of production; clinical use of X-radiation; and radiation safety procedures.

DH 253 Oral Radiology II
(1-3-2)
Special techniques for handicapped patients, extra-oral procedures, occlusal projections, radiographic detection, and interpretation of potential pathology. Includes introduction to use of the Panorex X-ray machine and refinement of techniques in exposure, processing, and radiographic evaluation.
Prerequisite: DH 244.

DH 254 Introduction to Periodontology
(1-0-1)
Introduction to periodontology with emphasis on etiology and pathogenesis of periodontal disease, disease classification, and assessment procedures.
Prerequisite: DH 244.

DH 267 Emergency Procedures
(3-0-3)
Prevention, preparation, and management of emergency situations common in the dental environment. Individual and team practice in carrying out emergency procedures.
Prerequisite: DH 244.

DH 275 Dental Ethics
(1-0-1)
Professional Ethics and legal requirements of the profession.
Prerequisite: Admission in to the Dental Hygiene Program.

DH 299 Laboratory Practice
(Hours to be arranged each term.)

DH 307 Seminar
(Hours to be arranged each term.)

DH 321, DH 322, DH 323 Dental Hygiene Clinical Practice and Seminar
(321-F)(1-6-3)(322-W)(1-6-3)(323-S)(2-12-6)
Continued development of dental hygiene skills, ultrasonic and advanced instrumentation, expanded functions and observation in specialty practices.
Prerequisite: For DH 321–DH 223.
Prerequisite: For DH 322–DH 321.
Prerequisite: For DH 323–DH 322.
DH 340 Prevention IV  
(2-1-3)  
Recognition and promotion of positive oral health habits for adolescents. Eating disorders, orthodontics, tobacco cessation, and drug/alcohol concerns and their effect on the oral cavity. Sports guard use and fabrication. Mental and physical healthcare for the provider.  
Prerequisite: DH 242.

DH 341 Prevention V  
(3-0-3)  
Dental care for oral cancer patients. Examination of different antimicrobials and their use. The needs of geriatric patients and special needs patients. Healthcare for the provider.  
Prerequisite: DH 340.

DH 344 Advanced General and Oral Pathology  
(3-0-3)  
Common general and oral pathologic conditions, oral manifestations of systemic diseases, endocrine system disorders, autoimmune, bone, and salivary gland diseases. Emphasis will be placed on description, differential diagnosis, and treatment planning appropriate for comprehensive dental hygiene care.  
Prerequisites: DH 244 and DH 366.

DH 351 Pain Management I  
(1-3-2)  
Coordinated lecture and laboratory practice in the techniques of local anesthesia. Factors in selection of local anesthetic.  
Prerequisite: DH 305.

DH 352 Pain Management II  
(2-3-3)  
Recognition of dental anxiety; behavioral management; nitrous oxide sedation techniques are practiced. Health history evaluation and case analysis.  
Prerequisite: DH 351.

DH 354 Periodontology  
(3-0-3)  
Evidence-based approach for treatment of periodontal disease including nonsurgical and surgical treatment. Root anatomy relating to effective instrument adaptation. Treatment planning for patients with all types of classifications of periodontal disease.  
Prerequisite: DH 254.

DH 363 Dental Materials  
(2-3-3)  
General properties, composition and manipulation of common dental materials. Expanded functions including denture relines and amalgam polishing are practiced.

DH 366 Dental Anatomy  
(2-0-2)  
In-depth study of crown and root morphology of primary and permanent dentitions with tooth restoration considerations. The temporomandibular joint and occlusion will also be studied.  
Prerequisite: DH 354.

DH 370, DH 371, DH 372 International Externship  
(1-0-1)(1-0-1)(0-3-1)  
Sequential courses preparing for and providing dental hygiene care at an international site using portable dental equipment. Cultural issues, teamwork, financing, needs assessment, goal setting and delivery of program.  
Prerequisites: For DH 370–DH 321 and DH 381.  
Prerequisite: For DH 371–DH 370.  
Prerequisite: For DH 372–DH 371.

DH 380 Community Dental Health I  
(1-3-2)  
Childhood education techniques provided and implemented within the community. Systemic fluoride and its controversial effects debated. Teamwork skills.  
Prerequisite: DH 241.  
Corequisite: DH 242.

DH 381 Community Dental Health II  
(1-3-2)  
Needs assessments and budget developed along with a project plan for a community oral health project. Educating and working with adolescents. Projects will be conducted in local schools. Teamwork techniques practiced.  
Prerequisite: DH 380.

DH 382 Community Dental Health III  
(1-3-2)  
The ongoing community oral health project will be implemented. Formative and summative evaluations compared and utilized in project. The dental hygienist’s role in managed care. The various structures, ethics, and alternatives of public health.  
Prerequisite: DH 381.

DH 383 Community Dental Health IV  
(0-3-1)  
Conclusion, evaluation and future recommendations of community oral health project. Formal written presentation of project. In-depth look at geriatric clients and their needs. Students will experience different settings in the local geriatric community.  
Prerequisite: DH 382.

DH 399 Laboratory Practice  
(Hours to be arranged each term.)  

DH 401 Overview of Advanced Dental Hygiene  
(3-0-3)  
Introduction to the online degree completion program. Career opportunities, roles of the dental hygienist, and the different emphases within the program are explored.

DH 407 Seminar  
(Hours to be arranged each term.)  

DH 421, DH 422, DH 423 Dental Hygiene Clinical Practice and Seminar VII, VIII, IX  
(421-SU)(2-6-4)(422-F)(1-12-5)(423-W)(1-12-5)  
Further refinement of clinical instrumentation and assess-ment skills. Emphasis on individualized care for patients with special needs. Variety of off campus clinical practice settings experienced.  
Prerequisite: For DH 421–DH 323.  
Prerequisite: For DH 422–DH 421.  
Prerequisite: For DH 423–DH 422.

DH 430 Dental Hygiene Board Review  
(2-0-2)  
Designed to help students prepare for their national board exam. Multiple-choice test-taking skills are practiced. Mock tests simulating the real exam are used.  
Prerequisite: DH 422.

DH 450 Instructional Methods in Dental Hygiene  
(3-0-3)  
Students develop instructional content and an instructional plan for teaching topics in dental hygiene. Teaching methods, learning styles, student and instructor evaluation, and use of media will be discussed.  
Prerequisite: DH 380.

DH 451 Instructional Experience  
(2-3-3)  
Students create and structure their own instructional experience, participate in a clinical or laboratory setting as a supervising instructor, present a didactic unit using visual aids.  
Prerequisite: DH 450.

DH 452 Instructional Practicum  
(0-9-3)  
Student and faculty adviser design an individualized teaching experience. A learning contract is written and implemented.  
Prerequisite: DH 451.

DH 453 Current Issues in Dental Hygiene  
(3-0-3)  
Current topics and issues related to dental hygiene practice are explored.  
Prerequisite: Admission to BDHO program.
DH 454 Dental Practice Management  
(3-0-3)  
Profitability of the Dental Hygiene Department; practice models, office design; patient satisfaction; financing options for the patient. Technology’s impact on practice management.  
Prerequisite: DH 323.

DH 455 Dental Hygiene Research  
(3-0-3)  
Students choose a topic, conduct library and clinical research and document results.  
Prerequisites: DH 453, MATH 243.

DH 460 Fundamentals of Distance Education  
(3-0-3)  
Students learn the fundamentals of online teaching and learning. Lesson plan developed in DH 450 will be finalized as an online module. Synchronous vs. asynchronous learning, instructional design and course management as it relates to online instruction will be discussed.  
Prerequisite: DH 450.

DH 461, DH 462, DH 463 Restorative Dentistry I, II, III  
(1-3-2)(1-3-2)(0-6-2)  
Properties of restorative dental materials. Practical experience using restorative dental materials. Placement and finishing of amalgam and composite restoration on typodonts in Restorative Dentistry I and on patients in Restorative Dentistry II and III.  
Prerequisite: For DH 461–DH 363.  
Prerequisite: For DH 462–DH 461.  
Prerequisite: For DH 463–DH 462.

DH 470 Community Program Planning  
(2-3-3)  
Dental hygienists plan and implement a community health program. Hygienists work with contacts and resources in their community to assess, analyze, budget, plan, implement and evaluate all phases of a community health project. Requires communication skills, networking, critical thinking and research.  
Prerequisite: DH 450.

DH 475 Dental Hygiene Research Methods I  
(2-0-2)  
Evidence-based practice is introduced. Current literature is reviewed and evaluated. Research ethics are discussed. Students write a literature review.

DH 476 Dental Hygiene Research Methods II  
(2-0-2)  
Students design and implement a pilot study.  
Prerequisite: DH 475.

DH 477 Dental Hygiene Research Methods III  
(2-0-2)  
Students analyze study data and document results.  
Prerequisite: DH 476.

DH 480 Community Health Practicum  
(0-9-3)  
Students design a community health project and gain practical experience providing dental hygiene care and education in a community group setting.  
Prerequisite: DH 450, DH 470.

DH 495 Individual Studies  
(Hours to be arranged each term.)

DH 499 Laboratory Practice  
(Hours to be arranged each term.)

(DHE) Dental Hygiene, (Extended)  
DH 100 Introduction to Dental Hygiene I  
(2-0-2)  
Orientation to the theory and practice of all aspects of the dental hygiene profession. The history of dental hygiene, professional organization and career opportunities are discussed.

DH 205 Oral and Dental Anatomy  
(3-3-4)  
Integrated anatomy, histology, and physiology of the head and neck region. Crown anatomy, root morphology and tooth development as applied to clinical situations. Lecture is to be delivered online. The lab will be at the ODS School of Dental Hygiene. Offered for the ODS School of Dental Hygiene only.

DH 207 Seminar  
(Hours to be arranged each term.)

DH 211 Principles of Dental Hygiene I  
(2-3-3)  
Sequential course providing theoretical background for the clinical practice of dental hygiene. Problem solving and critical thinking related to patient assessment and management. Communication skills emphasized. Offered at the ODS School of Dental Hygiene only.

DH 212 Principles of Dental Hygiene II  
(2-3-3)  
Sequential course providing theoretical background for the clinical practice of dental hygiene. Problem solving and critical thinking related to patient assessment and management. Communication skills emphasized. Offered at the ODS School of Dental Hygiene only.

DH 221 Dental Hygiene Clinical Practice I  
(0-6-2)  
Sequential course designed to provide clinical skills essential for the practice of dental hygiene. Skill development in the areas of patient appraisal, basic instrumentation, and individualized preventive care emphasized. Offered at the ODS School of Dental Hygiene only.

DH 222 Dental Hygiene Clinical Practice II  
(0-12-4)  
Sequential course providing theoretical background for the clinical practice of dental hygiene. Problem solving and critical thinking related to patient assessment and management. Communication skills emphasized. Offered at the ODS School of Dental Hygiene only.

DH 223 Dental Hygiene Clinical Practice III  
(0-12-4)  
Sequential course providing theoretical background for the clinical practice of dental hygiene. Problem solving and critical thinking related to patient assessment and management. Communication skills emphasized. Offered at the ODS School of Dental Hygiene only.

DH 227 General Pathology  
(3-0-3)  
Reaction of the human body to injury from physical, chemical, and biological agents. Inflammation, necrosis, cellular degeneration, disturbances of growth, circulation and neoplasia will be considered. Selected diseases manifesting typical symptomatology. Offered online for the ODS School of Dental Hygiene only.
DHE 233 Periodontology
(3-0-3)
First of a two-course sequence emphasizing periodontal diseases, their classifications, and the etiological factors involved. Preventive measures within the scope and responsibility of the dental hygienist are correlated with basic sciences and clinical aspects of periodontal diseases. Offered at the ODS School of Dental Hygiene only.

DHE 252 Oral Radiology I
(2-0-2)
Theoretical background and practical application of dental radiography. Exposure techniques, processing, mounting, and evaluation of dental radiographs; physical principles of production; clinical use of X-radiation; and radiation safety procedures. Lecture will be delivered online and the lab will be at the ODS School of Dental Hygiene. Offered for the ODS School of Dental Hygiene only.

DHE 253 Oral Radiology II
(2-0-2)
Special techniques for handicapped patients, extra-oral procedures, occlusal projections, radiographic detection, and interpretation of potential pathology. Includes introduction to use of the Panorex X-ray machine and refinement of techniques in exposure, processing, and radiographic evaluation. Offered at the ODS School of Dental Hygiene only.

DHE 261 Dental Health Education
(3-0-3)
An application of the concepts of preventive dentistry. Course includes oral health instruction for the individual patient based on an understanding of the causes and means to control dental disease. Selection and evaluation of oral physiotherapy aids, patient education, and other materials will be investigated. Concept of effective patient communication and motivation will be emphasized. Offered at the ODS School of Dental Hygiene only.

DHE 273 Oral Pathology
(4-0-4)
A study of oral diseases and manifestations of systemic diseases. Utilizes an independent learning program of slides, tapes and workbook. Offered online for the ODS School of Dental Hygiene only.

DHE 282 Medical and Dental Emergency Procedures
(2-3-3)
Equipment, drugs, signs, symptoms and treatment of medical emergencies that may occur in dental offices. Individual and team practice in carrying out emergency procedures (pulse, respiration, blood pressure, IV setup, oxygen, cardiopulmonary resuscitation, etc.) in timed simulations. Offered at the ODS School of Dental Hygiene only.

DHE 299 Laboratory Practice
(Hours to be arranged each term.)

DHE 307 Seminar
(Hours to be arranged each term.)

DHE 311 Principles of Dental Hygiene IV
(3-0-3)
Sequential course providing advanced theoretical background for the clinical practice of dental hygiene. Problem solving and critical thinking related to clinical cases. Interviewing skills, career opportunities, and alternative practice settings discussed. Community health programs evaluated. Offered at the ODS School of Dental Hygiene only.

DHE 312 Principles of Dental Hygiene V
(3-0-3)
Sequential course providing advanced theoretical background for the clinical practice of dental hygiene. Problem solving and critical thinking related to clinical cases. Interviewing skills, career opportunities, and alternative practice settings discussed. Community health programs evaluated. Offered at the ODS School of Dental Hygiene only.

DHE 313 Principles of Dental Hygiene VI
(3-3-4)
Sequential course providing advanced theoretical background for the clinical practice of dental hygiene. Problem solving and critical thinking related to clinical cases. Interviewing skills, career opportunities, and alternative practice settings discussed. Community health programs evaluated. Offered at the ODS School of Dental Hygiene only.

DHE 320 Dental Materials and Chairside Assisting
(2-3-3)
A study of the general properties, composition, and manipulation of common dental materials as well as practical application of these materials at the chairside utilizing the concepts of 4-handed dentistry. Lecture is delivered online and the lab is delivered at the ODS School of Dental Hygiene. Offered for the ODS School of Dental Hygiene only.

DHE 321 Dental Hygiene Clinical Practice IV
(0-12-4)
Sequential course designed for the development of skills necessary for entry into professional clinical practice. Expanded dental hygiene functions practiced. Variety of off-campus clinical practice settings experienced. Offered at the ODS School of Dental Hygiene only.

DHE 322 Dental Hygiene Clinical Practice V
(0-12-4)
Sequential course designed for the development of skills necessary for entry into professional clinical practice. Expanded dental hygiene functions practiced. Variety of off-campus clinical practice settings experienced. Offered at the ODS School of Dental Hygiene only.

DHE 323 Dental Hygiene Clinical Practice VI
(0-15-5)
Sequential course designed for the development of skills necessary for entry into professional clinical practice. Expanded dental hygiene functions practiced. Variety of off-campus clinical practice settings experienced. Offered at the ODS School of Dental Hygiene only.

DHE 333 Periodontal Therapy
(3-0-3)
Philosophy and theoretical background of advanced periodontal issues of all supportive structures are explored. Various periodontal surgery techniques are studied. Offered online for the ODS School of Dental Hygiene.

DHE 351 Dental Analgesia
(2-3-3)
This course explores pain control methods, including local anesthesia and nitrous oxide oxygen analgesia. Health history evaluation, local and systemic complications, anesthetic solutions, and vasoconstrictors and drug interactions are discussed. Techniques of local anesthesia, including block and infiltration injections are practiced. Administration of nitrous oxide is also practiced. Prerequisites: DHE 205, DHE 282.
DHE 380 Oral Health Planning and Care I  
(2-3-3)  
A systematic approach to developing community oral health programs. Behavioral management and techniques for providing dental care for patients with special needs are emphasized within the community. Major concepts of public health including epidemiology, prevention, financing and biostatistics. Individual or group projects involving dental health education for the community. Lecture is delivered online and the lab will be at the ODS School of Dental Hygiene. Offered for the ODS School of Dental Hygiene only.

DHE 381 Oral Health Planning and Care II  
(2-6-4)  
A systematic approach to developing community oral health programs. Behavioral management and techniques for providing dental care for patients with special needs are emphasized within the community. Major concepts of public health including epidemiology, prevention, financing and biostatistics. Individual or group projects involving dental health education for the community. Lecture is delivered online and the lab will be at the ODS School of Dental Hygiene. Offered for the ODS School of Dental Hygiene only.

DHE 392 Dental/Ethical Specializations  
(2-0-2)  
Professional ethics and legal requirements of the dental profession. Specialized areas of dentistry for the ODS School of Dental Hygiene only. Offered online at the ODS School of Dental Hygiene. Lecture is delivered online and the lab will be at the ODS School of Dental Hygiene. Offered for the ODS School of Dental Hygiene only.

DHE 399 Laboratory Practice  
(Hours to be arranged each term.)

(DMS) Diagnostic Medical Sonography

DMS 205 Applications of Abdominal Sonography  
(3-0-3)  
History of sonography. Orientation to patient history, abdominal cross-sectional anatomy, scanning, and normal sonographic presentation. Prerequisite: MIT 103 with grade “C” or better.

DMS 207 Seminar  
(Hours to be arranged each term.)

DMS 211 Sonographic Instrumentation I  
(3-3-4)  
Orientation to sonographic equipment and imaging peripherals to stress image optimization. Principles of sonographic computer skills, biological effects, dosimetry, quality control, equipment maintenance, and safety. Prerequisite: DMS 205 with grade “C” or better.

DMS 212 Sonographic Instrumentation II  
(3-3-4)  
Advanced principles of sonographic instrumentation of Doppler principles to include carotid applications, quality assurance, and preventive maintenance. Prerequisite: DMS 211 with grade “C” or better. Corequisite: VAS 210.

DMS 224 Sonographic Abdominal Scanning I  
(3-0-3)  
Orientation to cross-sectional abdominal anatomy and pathology of organs and vessels. Procedures and techniques, including scanning. Prerequisite: DMS 205 with grade “C” or better.

DMS 225 Sonographic Abdominal Scanning II  
(3-0-3)  
Advanced abdominal scanning procedures and techniques. Emphasis on superficial structures invasive procedures and Doppler correlation, including scanning. Prerequisite: DMS 224, DMS 232, and DMS 253 with grade “C” or better.

DMS 231 Sonographic Physics and Instrumentation I  
(3-0-3)  
Orientation to physical principles with an in-depth survey to sonographic instrumentation. Principles of sound, tissue propagation, machine components, imaging peripherals, image optimization, quality assurance, equipment maintenance, and safety. Corequisite: PHY 201.

DMS 232 Sonographic Physics and Instrumentation II  
(3-0-3)  
Advanced principles of sonographic instrumentation and Doppler principles to include carotid applications, hemodynamics, spectral analysis, color flow, energy mode, harmonic imaging, contrast agents and 3-D applications. Prerequisite: DMS 231 with grade “C” or better.

DMS 252 Sophomore Laboratory I  
(0-3-1)  

DMS 253 Sophomore Laboratory II  
(0-3-1)  
Applied scanning of the remainder of the abdominal cavity stressing anatomy, standard imaging planes, and hard copy quality. Doppler instrumentation as applied to the cerebrovascular system stressing pulse wave Doppler, color Doppler, Doppler optimization and standard imaging planes. Imaging review of prior anatomical areas. Prerequisites: DMS 205, DMS 231, DMS 252, PHY 201, all with grade “C” or better. Corequisites: DMS 232, DMS 224, BIO 335.

DMS 254 Sophomore Laboratory III  
(0-3-1)  
Applied scanning of small parts, musculoskeletal, superficial structures and Doppler correlation stressing standard imaging planes and hard copy image quality. MedSim abdominal applications. Imaging review of prior anatomical areas. Prerequisites: DMS 224, DMS 232, DMS 253, all with grade “C” or better. Corequisites: DMS 225, DMS 255.

DMS 255 Sonographic Film Analysis  
(3-0-3)  
Causes, correction, and prevention of specific sonographic artifacts and poor quality images. Evaluation of images. Prerequisites: DMS 224 and DMS 232 with grade “C” or better.

DMS 316 Survey of Vascular Technology  
(3-0-3)  
Orientation to vascular physics, equipment, and colorflow imaging. Explanation of Doppler imaging in relation to vascular anatomy. Prerequisite: DMS 333, DMS 355, and DMS 352 with grade “C” or better.

DMS 333 Pelvic Sonography  
(3-0-3)  
Orientation to male and female pelvic cross-sectional anatomy and pathology, differentiating between normal variations and abnormalities to include first trimester obstetrics and trans-vaginal scanning. Prerequisites: DMS 225, DMS 254, and DMS 255 with grade “C” or better.
DMS 334 Obstetrical Sonography I
(3-0-3)
Orientation to obstetrical scanning procedures and techniques. Emphasis on normal second and third trimester obstetrical anatomy and fetal embryology.
Prerequisite: DMS 333, DMS 335, and DMS 352 with grade "C" or better.

DMS 335 Diagnostic Medical Sonography Patient Care
(3-0-3)
Sonographic management and applications of cognitive, psychomotor, and interpersonal skills as they relate to the health care consumer. Patient assessment and communication, body mechanics, medical and surgical asepsis, medical emergencies, pharmacology, and analysis of ethical and legal issues.
Prerequisites: DMS 225, DMS 254, and DMS 255 with grade "C" or better.

DMS 337 Breast Sonography
(3-0-3)
Breast sonographic scanning procedures with an emphasis on 2D, 3D, 4D, panoramic, Doppler, color Doppler and Invasive applications. Correlation with mammography, MRI, and other imaging modalities.
Prerequisite: DMS 225 with grade "C" or better.

DMS 341 Echo Instrumentation
(3-0-3)
Echo equipment, 2-D, M-Mode, PW, CW, and Color Doppler instrumentation. Adult 2-D echocardiographic anatomy, electrophysiology, and EKG placement.
Prerequisite: DMS 255 with grade "C" or better.

DMS 342 Adult Echo
(3-0-3)
Prerequisite: DMS 341 with grade "C" or better.

DMS 343 Fetal Echo and Neonatal Sonography
(3-0-3)
Fetal cardiac development and normal anatomy. Fetal echocardiographic 2D views, M-Mode, Doppler, and Color Doppler. Common fetal cardiac pathology and anomalies. Neonatal topics include hip and neurological sonographic applications.
Prerequisite: DMS 334.

DMS 344 Obstetrical Sonography II
(3-0-3)
Advanced obstetrical scanning of second and third trimester obstetrical patients with emphasis on pathology.
Prerequisite: DMS 334 with grade "C" or better.

DMS 346 Musculoskeletal Sonography
(3-0-3)
Musculoskeletal sonographic scanning procedures with an emphasis on shoulder, wrist and knee applications. Correlation with other imaging modalities.
Prerequisite: DMS 225 with grade "C" or better.

DMS 352 Junior Laboratory I
(0-3-1)
Applied scanning of the male and female pelvis stressing anatomy, standard imaging planes, and hard copy quality. MedSim pelvic, endovaginal and first trimester applications. Imaging review of prior anatomical areas.
Prerequisites: DMS 225, DMS 254, and DMS 255, all with grade "C" or better.
Corequisites: DMS 333, DMS 335.

DMS 353 Junior Laboratory II
(0-3-1)
Applied scanning of normal first, second, and third trimester stressing anatomy, standard imaging planes, and image quality using the MedSim systems. Doppler examination of the carotid and lower extremity systems. Imaging review of prior anatomical areas.
Prerequisites: DMS 333, DMS 335, and DMS 352, all with grade "C" or better.
Corequisites: DMS 316, DMS 334.

DMS 354 Junior Laboratory III
(0-3-1)
Applied scanning of abnormal first, second, and third trimester scanning on the MedSim systems stressing pathology and additional imaging requirements. Final competencies of all prior imaging areas stressing image quality.
Prerequisites: DMS 334, DMS 335, DMS 353, all with grade "C" or better.
Corequisites: DMS 344, DMS 365.

DMS 365 Sonographic Pathology
(3-0-3)
Differential diagnosis and concepts of disease processes as applied to sonographic examination.
Prerequisite: DMS 334 with grade "C" or better.

DMS 388 Externship Preparation
(2-0-2)
Presentation of key concepts related to Diagnostic Medical Sonography externship and required services. Focus is on patient care and interpersonal scenarios the externship student will likely face while in the clinical environment. Review and discussion of the DMS Externship Handbook.
Prerequisites: DMS 334, DMS 316 and DMS 353 with grade "C" or better.
Corequisites: DMS 344, DMS 365 and DMS 365.

DMS 407 Seminar
(Hours to be arranged each term.)

DMS 430 Diagnostic Medical Sonography Externship
(0-40-15)
All B.S. students must complete four terms (12 months) of clinical experience in sonography at an OIT approved clinical site. Students will work under the direct supervision of registered sonographers.
Prerequisites: All academic coursework in the Diagnostic Medical Sonography Option curriculum.

(ECHO) Echocardiography

ECHO 225 Cardiopulmonary Patient Management Practices
(2-3-3)
Current issues in the practice of echocardiography with emphasis on the technologist’s responsibilities to the patient, the patient’s family and the professions of echocardiography. Transporting critically ill patients and recognizing emergency situations.
Prerequisite: ECHO 231.
Corequisites: ECHO 232, ECHO 332.

ECHO 227 Basic ECG Recognition and Testing
(3-0-3)
Basics of ECG testing, heart pressures, blood volume/physiology and the electrical conduction system. Focus on interpretation of ECG rhymes: normal ECG, ventricular hypertrophy, bundle branch block, AV block, myocardial ischemia, bradycardia, tachycardia, atrial fibrillation, ventricular fibrillation and irregular rhythms.
ECHO 231 Echocardiography I
(3-3-4)

ECHO 232 Echocardiography II
(3-3-4)
An intermediate level of instruction in scanning techniques and tomographic views according to the American Society of Echocardiography standards. Emphasis on cardiac pathology and the echocardiography evaluation. Prerequisite: ECHO 231, BIO 347, VAS 210. Corequisites: ECHO 225, ECHO 332, VAS 211.

ECHO 307 Seminar
(Hours to be arranged each term.)

ECHO 320 Cardiographic Methods
(3-3-4)
Recognition of ECG tracing with normal and abnormal arrhythmias, treadmill testing, holter monitoring, phonocardiography, and heart auscultation. Review of case examples for analysis and synthesis. Prerequisite: MIT 103 with grade "C" or better. Corequisite: BIO 220.

ECHO 321 Stress and Transesophageal Echo
(3-0-3)
Cardiac applications, protocols, and techniques related to stress echo and transesophageal echo. TEE anatomy, acquisition of images and the cardiovascular operating room. Particular emphasis on the mitral valve and surgical repairs. Prerequisites: ECHO 225, ECHO 322, ECHO 332, VAS 211. Corequisite: ECHO 333.

ECHO 325 Pediatric Echocardiography
(3-0-3)
Congenital heart disease, including neonate/infant and adult disorders. Congenital disorders including cardiac situs, ventricular morphology, great artery connections, valvular and subvalvular obstruction, atrial septal defect, ventricular septal defect. Prerequisites: ECHO 321, ECHO 333. Corequisites: CHEM 210, ECHO 376.

ECHO 332 Invasive Cardiology
(3-0-3)
Cardiac catheterization testing, Coronary artery interventions such as percutaneous transluminal coronary angioplasty (PTCA) and chamber pressure measurements. Prerequisite: BIO 347, ECHO 231, VAS 210. Corequisites: ECHO 225, ECHO 232.

ECHO 333 Echocardiography III
(3-3-4)
An advanced level of instruction in scanning techniques and tomographic views according to the American Society of Echocardiography standards. Cardiac pathology, and advanced methods in echocardiography. Prerequisites: ECHO 225, ECHO 232, ECHO 332 and VAS 211. Corequisite: ECHO 321.

ECHO 365 Abdominal/Renal Testing
(3-3-4)
Abdominal vascular anatomy and common disease processes. Students will be asked to perform basic abdominal vascular tests following very specific protocols and interpretations. Prerequisites: ECHO 325, ECHO 376. Corequisites: ECHO 385, ECHO 388.

ECHO 376 Survey of Vascular Testing
(3-0-3)
Basic vascular pathophysiology in carotid, arterial, and venous testing. Waveform recognition, interpretation, and protocols for testing. Prerequisites: ECHO 321, ECHO 333. Corequisites: CHEM 210, ECHO 325.

ECHO 385 Echocardiography Laboratory Management
(3-0-3)
Focus on human resource skills as necessary to manage an echocardiography laboratory. Includes the interview process, hiring and firing, as well as employee performance evaluation. Other topics will include reimbursement, licensure, accreditation and other management issues. Corequisites: ECHO 365, ECHO 388.

ECHO 388 Externship Preparation
(2-0-2)
Review and summarization of key concepts in Echocardiography. Focus is on patient care and interpersonal scenarios the externship student will likely face while in the hospital environment or independent echo lab. Review and discussion of the Echocardiography Externship Handbook. Prerequisites: ECHO 325, ECHO 376. Corequisites: ECHO 365, ECHO 385.

ECHO 407 Seminar
(Hours to be arranged each term.)

ECHO 420 Echocardiography Externship
(0-40-15)
Students work as registered professionals in the field. Patient echo exams with normal and abnormal stress tests, normal and abnormal wall motion. Case study presentation. Prerequisite: Admission to Echocardiography Degree Completion Program.

ECHO 420A Echocardiography Externship
(0-22-8)
Students work as registered professionals in the field. Cardiac surgical echoes (TEE) and contrast studies using various pharmacological agents. Case study presentation. Prerequisite: Admission to Echocardiography Degree Completion Program.

ECHO 421 Echo Senior Project
(4-0-4)
Students design a research-based senior project in the field of echocardiography, including interviews, research, literature review and formal presentation of the project. Prerequisites: ECHO 420; WRI 123 or WRI 227.

(ECO) Economics

ECO 201N Principles of Economics, Microeconomics
(3-0-3)
Topics include scarcity, consumer choice, supply and demand, elasticity, cost and pricing theory, theory of market structures (competition, monopoly, monopolistic competition, oligopoly). Pre- or corequisite: MATH 105 or MATH 111.

ECO 202N Principles of Economics, Macroeconomics
(3-0-3)
An introduction to the economic problem. Topics include gross domestic product, unemployment, monetary policy, fiscal policy, macro equilibrium, inflation, and supply and demand. Pre- or corequisite: MATH 105 or MATH 111.
ECO 203 Principles of Economics, Special Topics (3-0-3)
A survey of micro- and macroeconomic topics of current interest. Topics may include labor practices, international economics, natural resource economics, urban planning, and economic policy issues. Students prepare a research paper and present results to the class. Prerequisites: ECO 201N, ECO 202N.

ECO 207, 307, 407 Seminar (Hours to be arranged each term.)

ECO 367 International Economics and Finance Management (4-0-4)
Financial management involving international monetary environment; foreign exchange risk management; source and availability of funds to finance trade and multinational operations; taxation planning and control; international portfolio diversification; international banking; capital budgeting; political risk evaluation of performance. Prerequisites: BUS 308 and ECO 201N or ECO 202N.

(EE) Electrical Engineering

EE 101, EE 102, EE 103 Introduction to Engineering I, II, III (0-3-1) (0-3-1) (0-3-1)
A three course sequence introducing the field of engineering, focusing on electrical engineering and renewable energy. Success strategies. Engineering and scientific notation. Ohm’s Law. Problem solving, communication skills, ethics in engineering. Professional development and lifelong learning. Introduction to the design process culminating in a team design experience.

EE 131 Digital Electronics I – Combinational Logic (3-3-4)
Introduction to combinational logic, Gates, Boolean Algebra, Karnaugh mapping, number systems/codes, arithmetic circuits, decoders/encoders, Mux/DeMux, comparators, parity, code conversion, introduction to HDL, PLD HW implementation. Prerequisite: Placement in MATH 111 or higher.

EE 133 Digital Electronics II – Sequential Logic (3-3-4)
Introduction to sequential logic, latches, flip/flops, timers, counters/registers, HDL implementation, PLD HW implementation, finite state machine design/analysis, logic testing, DC parameters and timing analysis. Student must register for laboratory section. Prerequisite: EE 131 with grade “C” or better, MATH 111.

EE 221 Circuits I – DC and 1st Order Transient Analysis (3-3-4)

EE 222 Electric Circuits II – AC and 2nd Order Transient Analysis (3-3-4)

EE 223 Circuits III – Laplace Transforms and Applications (3-3-4)
Introduction to the Laplace Transform. Circuit Analysis using the Laplace Transform. Passive Filters. Active Filters. Frequency Response and Bode Plots. Two-Port Circuits. Student must register for a laboratory section. Prerequisite: EE 223 with grade “C” or better, MATH 252.

EE 301 Optoelectronics I – Optoelectronic Devices and Optical Detection (3-3-4)
Optoelectronic devices including polarizers, retarders, filters, modulators, monochromators, lock-in amplifiers. Propagation of radiation through optical systems. Optical detectors including photovoltaic and photoconductive devices, pyroelectric detectors, linear and area arrays. Photodetector noise, and post-detection electronic amplifiers and filters. Student must register for a laboratory section. Prerequisites: MATH 253N, PHY 223.

EE 303 Optoelectronics II – Lasers (3-3-4)
Laser radiation properties, laser cavities, coherence, atomic spectra, pumping rate, power gain, threshold conditions, resonator stability, beam shape, mode structure, beam modification with intracavity elements. Study of ion, molecular, solid-state, dye and semiconductor lasers. Student must register for a laboratory section. Prerequisite: EE 301 with grade “C” or better.

EE 305 Optoelectronics III – Fiber Optic Principles and Applications (3-3-4)
Light propagation in fibers, fiber types, fiber manufacture, light sources, optical detectors. Termination, coupling, and splicing of fibers. Introduction to fiber optic communication and sensors. Fiber devices, optical time domain reflectometry, fiber amplifiers, fiber lasers, and fiber sensors. Student must register for a laboratory section. Prerequisite: EE 341, EE 301 both with grade “C” or better.

EE 311 Signals and Systems (3-3-4)

EE 321 Electronics I – Introduction to Amplifiers and Semiconductor Devices (4-3-5)
Top-down approach. Voltage, current, transresistance and transconductance amplifiers. Operational amplifiers. Two-port models. Transfer functions, frequency response, gain-bandwidth-product. Nonlinear distortion, slewrate. Introduction to semiconductors, holes and electrons, p-n junctions, FETs, I-V curves. FET amplifiers. Student must register for a laboratory section. Prerequisite: EE 223 with grade “C” or better.
EE 323 Electronics II – Transistor Amplifiers and Analog ICs
(4-3-5)
Prerequisite: EE 321 with grade “C” or better.

EE 325 Electronics III – Analog IC Applications
(4-3-5)
Prerequisite: EE 323 with grade “C” or better.

EE 331 Digital System Design with HDL
(3-3-4)
Introduces the student to a Hardware Description Language and describes its role in Digital System Design. Behavioral and structural modeling. ROMs, PLAs, PALs, CPLDs and FPGAs. ASM charts and Design examples including keyboard scanner, counters, ALUs, multipliers, and controllers. Student must register for a laboratory section.
Prerequisite: CST 133 with grade “C” or better.

EE 333 Microcontroller Engineering
(3-3-4)
Microcontroller engineering using popular microcontroller, internal structures and control units, timing, interrupts and memory interfacing, assembly language programming specific to microcontroller, on-chip peripheral devices. Student must register for a laboratory section.
Prerequisite: EE 331 with grade “C” or better.

EE 335 Advanced Microcontroller Engineering
(3-3-4)
Second course Microcontroller Engineering, further use programmable microcontroller peripherals, A/D conversion, PWM, synchronous serial. Student must register for a laboratory section.
Prerequisite: EE 333 with grade “C” or better.

EE 341 Electricity and Magnetism with Transmission Lines
(4-0-4)
Prerequisites: EE 221 with grade “C” or better; MATH 254N and PHY 222.

EE 343 Solid-State Electronic Devices
(3-0-3)
Prerequisite: EE 321 with grade “C” or better.

EE 401 Communication Systems
(4-3-5)
Signal Analysis, Fourier series, Fourier Transforms; Analog signal transmission and Reception (AM, FM, PM); effects of noise in Analog Systems. Digital Data and Communication Systems; effects of noise in Digital Systems. Student must register for a laboratory section.
Prerequisites: EE 341 with grade “C” or better; MATH 465.

EE 411, EE 412, EE 413 Senior Project I, II, III
(1-3-2)(0-6-2)(0-6-2)
A three-term sequence integrating electrical engineering design, group dynamics, and technical communications. Multidisciplinary student teams will be introduced to a major electrical engineering project, ideally supplied by an industrial client working in health-related technologies, optoelectronics or renewable energy systems. The first term will culminate in a formal written proposal. Student teams will perform engineering design work as defined in the proposal during the second and third terms. The final design and recommendations will be presented orally and in a comprehensive final report. Entire sequence must be completed in three consecutive terms. Student must register for a laboratory section.
Prerequisites: EE 311, EE 325, both with grade “C” or better.

EE 419 Power Electronics
(3-3-4)
Power transistor characteristics. Power devices; SCRs, Power MOS, IGBTs, DIACs, TRIACs. Large signal amplifiers. Voltage regulators, switching regulators. Drive and snubber circuits. Photodiodes, optocouplers. Thermal de-rating, thermal modeling. Student must register for a laboratory section.
Prerequisite: EE 321 with grade “C” or better.

EE 421 Analog Integrated – Circuit Design
(4-3-5)
Models of IC active devices. Review single-transistor and multiple-transistor amplifiers. Current mirrors, active loads, and references. Output stages. Operational amplifiers with single-ended outputs. Frequency response of ICs, noise in ICs, bipolar, MOS and BiCMOS IC technology. Student must register for a laboratory section.
Prerequisites: EE 325 and EE 343, both with grade “C” or better.

EE 423 CMOS Digital Integrated – Circuit Design
(3-3-4)
MOSFETs (n and p), threshold voltage, body effect, channel length, mobility, MOS models (three/four terminal), CMOS inverter (transfer eqns, aspect ratio), transmission gate, IO structures, CMOS processing, CMOS technology, circuit performance ( latch-up, parameter estimation, delay models), design/layout. Student must register for a laboratory section.
Prerequisites: EE 133, EE 321 both with grade “C” or better.

EE 425 Wireless Communication
(3-3-4)
Baseband digital systems, messages, characters and symbols, sampling theorems. Noise sources, M-ary signals, baseband formatting including PCM waveforms, digital filters including FIR and IIR. Matched filters, band-pass modulation and demodulation techniques, and an introduction to spread spectrum transmission. Student must register for a laboratory section.
Prerequisites: EE 311, EE 325, both with grade “C” or better.

EE 431 Digital Signal Processing
(3-0-3)
Discrete systems and signals, linear time invariant systems, difference equations, frequency response, Z-transforms, analysis software, discrete Fourier transforms.
Prerequisite: EE 311, EE 335, both with grade “C” or better.
EE 441 Biomedical I – Introduction to Biomedical Engineering
(3-3-4)
Introduction to biomedical engineering, anatomy and physiology for engineers, bioelectric phenomena, biomedical sensors, biomedical instrumentation, biosignal processing, cardiovascular mechanics, biomaterials, tissue engineering, biomedical imaging and clinical engineering. Student must register for a laboratory section.
Prerequisite: EE 311 with grade “C” or better.

EE 443 Biomedical II – Signal Processing
(3-3-4)
Fundamental problems of biomedical signal processing; signal analysis; signal modeling, sources and types of biomedical signals. Arterial and ambulatory blood pressure (ABP/ABPM); intracranial pressure and oximetry (ICP); pulse oximetry (SpO2); electrocardiogram (ECG). Shocking harmonic models, spectrum analysis and time-frequency analysis. Student must register for a laboratory section.
Prerequisite: EE 311, with grade "C" or better.

EE 445 Biomedical III – Instrumentation
(3-3-4)
Review of biological systems (human), signals, measurements and transducers; bio-electrical signals and amplifiers; electrocardiograph (ECG); blood pressure; ultrasonography; x-ray; radiology and nuclear medicine equipment; power sources and systems. Electro-magnetic interference (EMI) effects; and electrical safety. Student must register for a laboratory section.
Prerequisite: EE 311, with grade "C" or better.

EE 456 Control System Design
(2-3-3)
Continuous-domain systems and Laplace transform review. System modeling, identification and linearization. System response and stability analysis. Classical tracking and regulating controller design using computers. PID tuning. Lab exercises in modeling, design and implementation. Student must register for a laboratory section.
Prerequisite: EE 225, EE 321 both with grade "C" or better.

EE 116 Network Theorems and Transient Analysis
(3-0-3)
Current sources; source conversion; Thevenin, Norton and superposition theorems; capacitance; magnetics; inductance; transient analysis of RC and RL circuits.
Prerequisite: EET 116 with grade "C" or better.

EE 115 Network Theorems and Transient Analysis Laboratory
(0-3-1)
Theoretical concepts discussed in EET 115 will be verified using available components and instrumentation.
Corequisite: EET 115.

EE 120 Amplifiers and Self-contained Circuits Laboratory
(0-6-2)
Theoretical concepts discussed in EET 125 verified using available components, instrumentation, and computer simulations using PSPICE.
Prerequisite: EET 116 with grade "C" or better.
Corequisite: EET 125.

EE 143 DC and AC Circuit Fundamentals
(5-0-5)
Network theorems applied to DC circuits: source conversions, Thevenin, Norton, superposition; capacitance; magnetic circuits; inductance; transient analysis of RC and RL circuits; sinusoidal waveforms; phasors; reactance and impedance; series, parallel, and series-parallel AC circuits.
Prerequisite: EET 101 with grade "C" or better.
Corequisites: EET 144 or EET 146; MATH 112.

EE 144 DC and AC Circuit Fundamentals Laboratory for LOET
(0-3-1)
Laboratory companion to EET 143 for LOET majors only. This course will not count for EET or CSET majors. Theoretical concepts covered in lecture will be verified using available components and instruments. This course must be taken the same term as EET 143. Written laboratory reports are required.
Prerequisite: EET 102 with grade "C" or better.
Corequisite: EET 143.

EET 207 Seminar
(Hours to be arranged each term.)

EET 209 Introduction to Amplifiers and Semiconductor Devices
(4-0-4)
Prerequisite: EET 125 with grade "C" or better.
Corequisite: EET 210.

EET 210 Amplifiers and Semiconductor Devices Laboratory
(0-6-2)
Theoretical concepts discussed in EET 209 verified using available components and instrumentation. Computer simulation using PSPICE.
Prerequisite: EET 126 with grade "C" or better.
Corequisite: EET 209.
EET 235 Transistor Amplifiers
(4-0-4)
Linear small-signal equivalent circuit models. Design and analysis of transistor amplifiers. n-channel, p-channel, JFET, MOSFET, npn, pnp common source, source follower, common-emitter, emitter follower, differential. Input impedance, output impedance, gain. Simple BJT and FET current mirrors. Midband frequency operation.
Prerequisite: EET 209.
Corequisite: EET 236.

EET 236 Transistor Amplifiers Laboratory
(0-6-2)
Theoretical concepts discussed in EET 235 verified using available components and instrumentation. Computer simulation using PSPICE.
Prerequisite: EET 210.
Corequisite: EET 235.

EET 237 AC Circuits, Filters and Signals
(3-0-3)
RC transient analysis, sinusoidal AC voltage, phasors, average and effective value, the decibel, simple RC transfer functions, low-pass, high-pass and band-pass filters, periodic and aperiodic signals in time and frequency, bandwidth. For non-EET majors.
Prerequisite: EET 115 with grade “C” or better, Math 252.
Corequisite: EET 238.

EET 238 AC Circuits, Filters and Signals Laboratory
(0-3-1)
Lab to accompany EET 237. For non-EET majors.
Prerequisites: EET 115 with grade “C” or better, Math 252.
Corequisite: EET 237.

EET 243 Introduction to Digital Concepts
(3-0-3)
Digital concepts covering Boolean algebra, algebraic simplification, number systems, and various combinational circuit elements (AND, OR, XOR, NAND, NOR gates). Combinational circuit implementation using NAND gates, NOR gates, decoders, encoders, multiplexers, and demultiplexers. Karnaugh Maps are used in the synthesis of combinational circuits.
Prerequisite: EET 125.
Corequisite: EET 244.

EET 244 Introduction to Digital Concepts Laboratory
(0-3-1)
Circuits will be built using integrated circuits to reinforce the theoretical concepts discussed in EET 243. Computer simulation.
Prerequisite: EET 126.
Corequisite: EET 243.

EET 245 Digital Logic
(3-0-3)
Combinational logic design using multiplexers, decoders, ROMs, and PLAs. Sequential circuit elements (flip-flops) presented along with applications such as counters and registers. Basic TTL and CMOS circuits analyzed.
Prerequisite: EET 243.
Corequisite: EET 246.

EET 246 Digital Logic Laboratory
(0-6-2)
Combinational and sequential designs built using SSI, MSI, and LSI integrated circuits. Circuits tested and simulated.
Prerequisite: EET 244.
Corequisite: EET 245.

EET 249 Digital Logic Laboratory for LOET
(0-3-1)
Laboratory companion to EET 245 for LOET majors only. This course will not count for EET majors. Theoretical concepts covered in lecture will be verified using available components and instruments. This course must be taken the same term as EET 245. Written laboratory reports are required.
Prerequisite: EET 244.
Corequisite: EET 245.

EET 265 Amplifier Frequency Response
(4-0-4)
Bode Plots, effects of coupling and bypass capacitors, design of BJT and FET amplifiers, design of wideband amplifiers, tuned-circuit techniques, series and parallel resonance, tuned amplifiers, crystal-controlled oscillators.
Prerequisite: EET 235.
Corequisite: EET 266.

EET 266 Amplifier Frequency Response Laboratory
(0-6-2)
Laboratory companion to EET 265 in EET. Theoretical concepts discussed in EET 265 verified using available components and instrumentation. Computer simulation using PSPICE.
Prerequisite: EET 236.
Corequisite: EET 265.

EET 275 Power Amplifiers and Special Devices
(3-0-3)
Thermal modeling, power devices, class A amplifiers, transformer-coupled amplifiers, class B push-pull amplifiers, power supplies, rectifier circuits, zener diodes, voltage regulators, switching regulators, thyristors, SCRs, DIACs, TRIACs, optoelectronics, LEDs, photodiodes, phototransistors, optocouplers, selected devices.
Prerequisite: EET 235.
Corequisite: EET 276.

EET 276 Power Amplifiers and Special Devices Laboratory
(0-6-2)
Theoretical concepts discussed in EET 275 verified using available components and instrumentation. Computer simulation using PSPICE.
Prerequisite: EET 236.
Corequisite: EET 275.

EET 281 Topics in Network Analysis
(3-0-3)
Prerequisite: Department approval.
Corequisite: MATH 251.

EET 283 Topics in Digital Circuits
(2-3-3)
Prerequisite: Department approval.
Corequisite: MATH 251, EET 286.

EET 285 Topics in Analog Devices and Circuits
(3-0-3)
Analysis of AC small and large signal conditions for bipolar junction field-effect transistors and MOS field effect devices. Frequency effect of single stage amplifiers. Multistage amplifier circuits. Designed for community college transfer students.
Prerequisite: Department approval.
Corequisite: MATH 251, EET 286.

EET 286 Topics in Analog Devices and Circuits Laboratory
(0-3-1)
Laboratory companion to EET 285. Theoretical concepts discussed in lecture will be verified using available components and instrumentation. Must be taken during the same term with EET 285. Designed for community college transfer students.
Prerequisite: Department approval.
Corequisite: EET 285.

EET 298 Reading and Conference
(Hours to be arranged each term.)

EET 299 Laboratory Practice
(Hours to be arranged each term.)
EET 308 Introduction to MOS Microelectronics
(3-0-3)
Introduction to microelectronics, semiconductor physics, integrated circuit (IC) technology, pn junction and MOS (Metal-Oxide-Semiconductor) electrostatics, MOS FETs (Field-Effect Transistors), selected digital circuits using CMOS (Complementary MOS) FETs, PSPICE modeling of IC MOSFETs.
Prerequisites: EET 245 or EET 237 and CST 262 or instructor consent.
Corequisite: EET 309.

EET 309 Introduction to MOS Microelectronics Laboratory
(0-3-1)
Laboratory companion to EET 308. Theoretical concepts discussed in lecture verified using available components and instrumentation. Computer simulation using PSPICE. Written and oral laboratory reports required.
Prerequisites: EET 246 or EET 238 and CST 262 or instructor consent.
Corequisite: EET 308.

EET 319 Fundamentals of Microwave and RF Technology
(3-0-3)
Introductory topics in the field of microwaves. Transmission lines (wave propagation, losses, reflected waves, and standing waves), Smith Charts, waveguides, microstrip circuits, and s-parameters are covered. Problem solving will use tools such as Smith Charts and software packages.
Prerequisite: EET 373.
Corequisite: EET 472.

EET 340 Optics
(3-3-4)
A course in geometrical and wave optics. Topics in reflection and refraction at plane and curved surfaces; imaging properties of lenses; paraxial ray tracing of optical systems; superposition; interference; interferometers; diffraction; polarization; scattering.
Prerequisites: Physics 223, Math 252.

EET 358 Senior Project: Individual Project Proposal
(1-3-2)
Selection, definition, and analysis of a problem suitable for senior project prior to actual project development. Includes consideration of project parameters and implications, proposal of alternate solutions, and justification of selected solution. Culminates in writing of project proposal.
Prerequisites: EET 363, EET 373.
Corequisites: WRI 321, EET Department approval.

EET 361 Digital Systems I
(4-3-5)
State machine design including state reduction and state assignment. Sequential circuit analysis. Digital system implementation using MSI devices such as ROMs and PLDs. Asynchronous state machines analyzed and designed. Computer circuits and memory elements used.

EET 362 Digital Systems II
(4-3-5)
Design digital systems using programmable devices as well as conventional building blocks. System controllers designed using state tables, ASM charts and VHDL. Laboratory explorations and projects of theoretical concepts.

EET 363 Introduction to Microcontrollers
(4-3-5)
A study of Motorola 68HC12 microcontroller. Internal structure, registers, busses, control unit. Clock, machine and instruction cycle timing, interrupts and DMA. Instruction set, mnemonics, functions and assembly language programming. Interfacing to external memory and I/O on chip peripherals. Laboratory explorations and projects of theoretical concepts.

EET 364 Microcontroller Systems
(4-3-5)
Advanced features of Motorola 68HC12 Microcontroller System environment with the external memory and peripheral devices. Advanced numerical routines. Digital control systems, displays, transducers. Laboratory explorations and projects of theoretical concepts.

EET 367 LaPlace Transforms and Applications
(4-3-5)
Applications of LaPlace in first and second order networks; poles, zeros and stability in S-plane; active filters and oscillators. Laboratory explorations and projects of theoretical concepts.

EET 371 Operational Amplifiers and Applications
(4-3-5)
Properties, modeling and analysis of feedback systems using the operational amplifier. Stability and frequency compensation of operational amplifiers. Oscillators, nonlinear circuit applications, Schmitt trigger, analog switches, peak detectors and sample and hold. A/D and D/A conversion techniques. Laboratory explorations and projects of theoretical concepts.

EET 373 Senior Project: Individual Project Proposal
(1-3-2)
Selection, definition, and analysis of a problem suitable for senior project prior to actual project development. Includes consideration of project parameters and implications, proposal of alternate solutions, and justification of selected solution. Culminates in writing of project proposal.
Prerequisites: EET 363, EET 373.
Corequisite: EET 367.
EET 423 ASIC Design I Senior Project
(2-3-3)
An introduction to various aspects of the design of an ASIC (Application Specific Integrated Circuit) and to new industry trends both in digital and analog design. Laboratory demonstrations and experiments with a complete EDA (Electronics Design Automation) software package. Senior project proposal required. Prerequisites: EET 361 and EET 373. Pre- or corequisites: EET 464 and EET 473.

EET 425 Telecommunications II
(2-3-3)
Baseband digital systems; messages, characters and symbols; review of sampling theorems and discrete vs continuous signals; noise sources in digital communications system; M-ary signals; baseband formatting including PCM waveforms; digital filters, including FIR and IIR, raised cosine filters, matched filters; bandpass modulation and demodulation techniques; spectrum transmission. Prerequisite: EET 415.

EET 433 ASIC Design II Senior Project
(1-6-3)
Advanced topics in ASIC design: behavioral description languages, timing in digital design, design for testability, fault simulation. Field Programmable Logic Devices (FPGA). Simulation and prototyping of the senior project with FPGAs. Senior project report required. Prerequisite: EET 423.

EET 435 Telecommunications III
(0-9-3)
A capstone course in telecommunications. Students will propose, design and construct/simulate a solution to some telecommunications problem or issue. The student will research vendor data books, application notes, articles and texts to support the design of a telecommunications related circuit, module, or system. A final paper will be written and presented to a faculty board. Prerequisites: EET 415, EET 425, EET 455.

EET 436 Optoelectronic Devices
(3-3-4)
An introduction to devices commonly used in opto-electronics. Devices and instruments studied include photodiodes, polarizers, retarders, filters, modulators, monochromators, integrating spheres and lock-in amplifiers. Prerequisite: EET 373.

EET 437 Optical Detection
(3-3-4)
Propagation of optical radiation through optical systems. UV and visible optical detectors including photovoltaic and photoductive detectors, pyroelectric detectors, linear and area arrays. Noise in photo detectors. Post detection electronic amplifiers and filters. Prerequisites: EET 436, MATH 254N.

EET 443 ASIC Design III Senior Project
(0-9-3)
Completion of an integrated circuit design. Creation of an IC prototype in FPGA or a file for fabrication in silicon. Final report containing project documentation required. Prerequisite: EET 433.

EET 445 Optical Fibers
(3-3-4)
Theory and practice of light propagation in optical fibers, light sources, types of optical fiber, optical detectors. Termination, coupling and splicing of optical fibers. Prerequisites: EET 436, MATH 254N.

EET 447 Topics in Optoelectronics
(0-3-1)
A course designed to give the student additional capabilities with a variety of optics systems and instrumentation. Possible topics include large optics, optical arrays, Fresnel optics, interferometers, spectrometers, thin films and coatings, polarization. All topics to be investigated in a lab setting. Pre- or corequisite: EET 436.

EET 454 Automated Test Engineering I
(2-3-3)
An introduction to Automated Test Engineering (ATE). Topics include: measurement techniques for ATE instruments, measurement errors, and software used to control automated instruments. The IEEE-488 bus is also discussed. Students will complete a group term project. Prerequisites: CST 116, EET 363, EET 373.

EET 455 Digital System Design
(3-0-3)
Use of register-transfer-language (RTL) notation to describe digital systems. Design of virtual machine, instruction set, random and microword controlled computer systems for a typical digital computer. Design of a floating point coprocessor. Description of advanced architecture concepts, multiprocessors, cache memory, pipe-line virtual machines. Prerequisite: EET 364.

EET 458 Senior Project: Individual Project Design
(1-3-2)
A continuation of EET 358 with emphasis on manufacturer and vendor contact resulting in verification and implementation of proposal tradeoffs in support of prototype design and construction. Prototype construction of project solution begins. Report produced on design calculations and functional analysis of hardware and/or software needed for project solution. Prerequisite: EET 358. Corequisite: WRI 322.

EET 459 Digital Signal Processing II Senior Project
(3-0-3)
Analysis and synthesis of digital signal processing systems including the following topics: nonrecursive and recursive filters; hardware accelerators; digital speech processing. Most of the homework will be done using special applications software running on PC based work stations. DSP project proposal. Prerequisite: EET 471.

EET 461 Optoelectronic Principles
(3-0-3)
A course to investigate the physics associated with a variety of commonly used optical devices. Solid-state physics required to understand function of optical devices such as detectors, solid-state lasers, and optical modulators. Quantum aspects of optics leading to the understanding of photo-emissive devices, optical radiation and laser dynamics. Prerequisites: PHY 223, MATH 254N.

EET 462 Lasers
(3-3-4)
Laser radiation properties, laser cavities, coherence, atomic spectra, Boltzmann statistics, pumping rate, power gain, threshold conditions, resonator stability, beam shape, mode structure, beam modification with intracavity elements. Prerequisite: EET 461.

EET 463 Quality Assurance and Reliability
(3-0-3)
Inspection and testing for quality control of electronic circuits and systems. Statistical evaluation of mean-time-between-failure. Sampling plans, analysis of variance, evaluation of reliability. Device and system test objectives and schemes. Case studies in quality control. Prerequisites: Senior standing, MATH 254N.
EET 464 Automated Test Engineering II
(2-3-3)
A continuation of EET 454. Topics include: measurement techniques and error in digital circuits, IEEE-488 and VXI bus structures, design for test and test error analysis. Course includes a group term project.
Prerequisite: EET 454.

EET 465 Optoelectronic Applications
(3-3-4)
A course designed to further the knowledge and capabilities of the optoelectronics student in fields of interest. Possible areas of study include: Optical Testing, Fourier Optics, Holography, Crystal Optics, Laser Systems and Fiber Optic Systems.
Prerequisites: EET 462, EET 436, EET 437.

EET 467 Modern Control Systems
(3-0-3)
Analysis and application of modern control system theory in selected areas of electronics, industrial process control, and other systems. The phase-lock-loop is analyzed as the introductory example of a control system application. S and Z transforms are developed in control system contexts.
Prerequisites: EET 373, MATH 321.

EET 468 Senior Project: Individual Project Evaluation
(1-12-5)
A project laboratory (continuation of EET 458). Project proposed in EET 358 and designed in EET 458 will be constructed, tested, evaluated and packaged. Complete documentation with performance specifications, functional description, design calculations, test results, schematics, performance graphs, flowcharts, parts lists, wiring diagrams, and photographs become part of the complete senior project final report. The student will defend his/her project before a review panel that will consist of the senior project adviser, another technically qualified panelist and a third person of the student’s choice.
Prerequisite: EET 458.
Corequisite: WRI 323.

EET 469 Digital Signal Processing III Senior Project
(0-9-3)
Digital Signal Processing senior projects defined in EET 459 will be designed and implemented. The projects will generally include both hardware and software. A final paper will be written and an oral presentation given.
Prerequisite: EET 459.

EET 471 Digital Signal Processing
(4-3-5)
Analysis of discrete systems and signals including the following topics: discrete signals; linear time invariant systems, difference equations, frequency response, Z transforms. Analysis software applied to solutions. Discrete Fourier transforms. Spectral analysis. Laboratory explorations and projects of theoretical concepts.

EET 472 Communication Systems
(4-3-5)
Fourier series and transforms. System noise sources and definitions. Amplitude, frequency and phase modulation. Principles of superheterodyne receivers. Transmitter circuits and phase lock loop. Digital modulation techniques such as FSK, PSK and QPSK. Laboratory explorations and projects of theoretical concepts.

EET 473 Analysis and Design of Analog Integrated Circuits
(4-3-5)
The properties, modeling and analysis of bipolar and field effect transistor circuits commonly found in analog integrated circuits. Topics include high frequency effects, multistage circuits, active loads, output stages and the design of a complete integrated circuit operational amplifier. Laboratory explorations and projects of theoretical concepts.

EET 476 Optoelectronics Senior Project
(1-6-3)
Capstone course in optoelectronics. Students will propose, design and construct an optoelectronics circuit, module or system.
Prerequisites: EET 447, EET 465.

EMS 115 Introduction to EMS
(2)
An overview of EMS including history, EMS systems design, legal considerations, medical ethics, roles and responsibilities of the paramedic, national, state, county and private EMS organizations, legislation, communication systems and biomedical informatics. Includes future trends of health care delivery, introduction to continuous quality improvement, management and research in EMS

EMS 200 Medical Terminology
(3)
Students build a strong medical vocabulary using prefixes, suffixes, and Greek and Latin verbs and adjectives. Students learn anatomical roots and examine anatomical structures, disease, procedures, tumors, and descriptive terms using simple word analysis.

EMS 211 Prehospital Emergency Pharmacology
(3)
Lectures relating specific emergencies to the types of medications used for treatment. Includes classifications, actions, indications, administration and dosages, precautions and side effects of each of the medications used in prehospital treatment of medical and traumatic emergencies. In addition, students learn common prescription medications found in the home.
Prerequisite: CHE 210.

EMS 218 Trauma Assessment and Management
(3)
Introduction to kinematics of trauma, and rescue techniques. Pathophysiology, assessment, and management of fluids and shock, CNS injuries, soft tissue injuries, burns, extremity injuries, spinal immobilization, control of hemorrhage and unique considerations in geriatric, pediatric and pregnant patients. Includes completion of Prehospital Trauma Life Support Course.

EMS 231 Medical Emergencies I
(3)
The first in a series of three, this course discusses the cardiac and pulmonary related emergencies including the pathophysiology, assessment and management; arterial blood gases, acid base balance; airway and ventilation, basic and advanced airway management techniques and the differential diagnosis of cardiac and pulmonary diseases.

EMS 232 Medical Emergencies II
(4)
Course content includes the pathophysiology, assessment and management of neurological, abdominal/genitourinary and endocrine emergencies. Students learn to assess and manage normal and abnormal obstetric patients, as well as neonate and pediatric patients.
Prerequisite: EMS 231.
EMS 233 Medical Emergencies III  
(3)  
The third in a series of medical emergency courses, this course focuses on the pathophysiology, assessment, emergency management and prevention of toxicology, psychiatric and environmental emergencies. In addition students will learn specific considerations for geriatric patients, abuse victims, physically challenged and chronic care patients.  
Prerequisite: EMS 232.

EMS 235 Basic Electrocardiography  
(2)  

EMS 236 Advanced Electrocardiography  
(2)  
Building upon basic EKG knowledge, this course advances into 12-lead EKG interpretation and prehospital treatment. Focusing on signs and symptoms of ischemia or infarction, axis deviation, and other EKG anomalies, students learn about various treatment modalities.

EMS 237 Geriatric Seminar Series  
(3)  
A conjoint, interdisciplinary course designed to introduce health care profession students to the aging patient. Six evening sessions conducted at OHSU cover topics including successful aging, the senses and aging, maintaining mobility, mental health issues, family caregiving, elder abuse, community resources, and common problems associated with aging.

EMS 271 EMT-Paramedic Skills Laboratory Part 1  
(2)  
Offers the first part of a two-term course. Reviews EMT-Basic skills. Students learn and practice skills included in the EMT-Paramedic scope of practice. Advanced life support skills offered in part one include advanced patient assessment skills, airway and intubation, IV fluids and medication administration, cardiac monitoring and defibrillation, scenario based learning and evaluation.

EMS 272 EMT-Paramedic Skills Laboratory Part 2  
(3)  
Continues the learning and practice of skills acquired in EMT-Paramedic Skills Lab, Part 1 with the addition of new skills learned in obstetrics, pediatrics, and medical emergencies. Includes invasive skills lab sessions, and scenario based learning and evaluation.  
Prerequisite: EMS 271.

EMS 281 Clinical Practicum I  
(6)  
Part I of a two-part clinical experience correlating knowledge and skills presented in lectures and labs. Supervised experience provided in emergency departments, respiratory therapy, psychosocial, poison control, EMS communications, anesthesia, surgical rounds, medical/cardiac critical care units, pediatrics and labor and delivery.

EMS 282 Clinical Practicum II  
(12)  
Continuation of a two-part clinical experience correlating knowledge and skills presented in lectures and labs. Supervised experience provided in emergency departments, respiratory therapy, psychosocial, poison control, EMS communications, anesthesia, surgical and medical critical care units, pediatrics and labor and delivery.

EMS 290 Field Externship Practicum  
(18)  
Field experience with an affiliated advanced life support transporting agency. Students work under the direct supervision of a paramedic field-training officer.

(ENGR) Engineering

ENGR 207 Seminar  
(Hours to be arranged each term.)

ENGR 211 Statics  
(4-0-4)  
Fundamental principles of mechanics of rigid bodies and the application of these principles to engineering problems.  
Pre- or corequisite: MATH 252.

ENGR 212 Dynamics  
(3-0-3)  
Kinematics of particles and rigid bodies. Kinetics of particles and rigid bodies in plane motion, including Newton’s second law, work and energy, and impulse and momentum.  
Prerequisites: ENGR 211, MATH 252.

ENGR 213 Strength of Materials  
(3-3-4)  
Internal stresses and deformations of structural members and machines when subjected to external forces.  
Prerequisite: ENGR 211.

ENGR 231 Fluid Mechanics  
(3-3-4)  
Fundamental properties of fluids, fluid statics, fluids in motion, dimensional analysis and similarity, flow in conduits, and flow measuring devices. Emphasis on practical applications of fluid mechanics principles.  
Prerequisites: ENGR 211 and MATH 252.

ENGR 236 Fundamentals of Electric Circuits  
(3-0-3)  
Resistive circuits, operational amplifiers, capacitors, inductors, transient analysis, sine waves, AC circuit analysis, resonance, transformers. Not for Electronics Engineering Technology and Computer Engineering Technology students.  
Prerequisites: MATH 251, PHY 202/222.

ENGR 266 Computer Programming for Engineers  
(2-3-2)  
Programming and problem solving using current computer software. General programming techniques using conditional statements, looping, subroutines, and data input/output will be stressed. Consideration of features specific to the software being used will also be presented.  
Prerequisite: MATH 111.

ENGR 355 Thermodynamics  
(3-0-3)  
An introductory course in thermodynamics, the science of heat energy conversion. Develops understanding of energy, heat, work, efficiency, and ideal thermodynamic cycles. Teaches first and second laws of thermodynamics and perfect gas law.  
Prerequisites: MATH 252; PHY 202 or PHY 222.

ENGR 407 Seminar  
(Hours to be arranged each term.)

ENGR 485 Fundamentals of Engineering Exam  
(1-0-1)  
Students are required to take the Fundamentals of Engineering Exam offered by the Oregon State Board of Examiners for Engineering and Land Surveying, or other state board with prior approval of program director.  
Prerequisite: Graduating Senior.
(ENGT) Engineering Technology

ENGT 101 Engineering Technology Techniques
(2-6-4)
Engineering terminology and problem solving tools including computer aided drafting, technical sketching, word processing, spread sheets, multiview projections, significant figures, and engineering problem solving techniques. Prerequisite: MATH 100.

ENGT 103 Engineering Terminology
(3-2-4)
Terminology, symbols, and units commonly used in the engineering field. Interpretation and reproduction techniques of engineering drawings and graphs. A brief overview of the field of civil engineering. This course is designed primarily for the Office Systems Technology program.

ENGT 104 Electrical and Electronic Nomenclature and Symbols
(3-0-3)
A survey course in basic electricity and electronics, emphasizing terminology and nomenclature. This course is designed primarily for the Office Systems Technology program.

ENGT 207 Seminar
(Hours to be arranged each term.)

ENGT 230 Statics
(3-0-3)
Fundamental principles of mechanics of rigid bodies and the application of these principles to engineering problems. Corequisite: MATH 112.

ENGT 231 Strength of Materials
(3-0-3)
Internal stresses, deflections, and deformations of structural members and machines when subjected to external forces. Prerequisite: ENGT 230 or ENGR 211.

ENGT 232 Advanced Strength of Materials
(2-3-3)
Internal stresses, deflections, and deformations of structural members and machines when subjected to external forces. Column buckling, 3-D stress states, and failure criteria. Prerequisite: ENGT 231.

ENGT 310 Introduction to Geothermal Energy
(3-0-3)
Overview of geothermal energy: distribution, geology, hydrology, and geochemistry; exploration and extraction techniques; uses including power generation, space heating, agriculture, process and multistage utilization; and environmental, economic, and legal considerations. Field trips to local sites.

ENGT 311 Passive Solar and Solar Cell Design
(3-0-3)
Residential passive solar heating and super-insulation construction techniques including heat load calculations using the Balcomb SHF method. Technical and economic analysis of solar electric cells, storage batteries, and inverter technology. Prerequisite: PHY 202 or instructor consent.

ENGT 312 Critical Path Techniques
(1-3-2)
Scheduling techniques used by management on engineering and industrial projects. The course will concentrate on the Critical path Method (CPM), but will also include comparisons with Gantt charts and Program Evaluation Review Technique (PERT). Concepts will be applied to mini-projects in class and expanded through the use of selected computer software packages.

ENGT 370 Introduction to Automation and Robotics
(2-3-3)
A survey of automation and all areas of robotics with an emphasis on the industrial robot. It will include history, terminology, use, future, impact on society, and hands-on laboratories. Prerequisites: MATH 112, a programming course.

ENGT 370, 490 Co-op Field Practice
(Variable Credit)
An approved work program related to the student's field of specialization for a continuous three-month period. The employer and the type, level, and difficulty of the particular job must be approved by the student's Engineering Technology Department prior to the employment period. A written comprehensive report of each season's activity must be submitted during the following term of residence. Prerequisites: Associate degree and two terms of residence.

ENGT 390, 491 Co-op Field Practice
(Variable Credit)
An approved work program related to the student's field of specialization for a continuous three-month period.

ENGT 407 Seminar
(Hours to be arranged with approval of curriculum coordinator.)

ENGT 415 Occupational Safety
(2-3-3)
Topics include current occupational safety and health issues. Practical application of regulations in the industrial setting. Compliance to Industrial Hygiene and General Safety Standards. Common safety violations and implementation of safety programs. Prerequisite: Junior standing in MFG.

ENGT 471 Microprocessor Application in Automation and Robotics
(2-3-3)
This is an applied course in using microprocessors to support controlling motion, such as in robotic manipulators and automated equipment and interfacing sensor inputs. Prerequisites: CST 331 and ENGT 370.

ENGT 500 Research Methods
(3-0-3)
Study of industrial analytical techniques used to develop new technologies, including the use of computer aided engineering systems and software for design purposes. Examination of research and development methods, current industrial practices and applications of new technologies.

ENGT 507 Seminar
(Hours to be arranged each term.)
In-depth examination of current theories, research, trends and processes of industry. Individual study, information exchange, and research of selected industrial topics.

ENGT 518 Data Communications
(3-3-4)
Data communications and computer network protocols, hardware elements, and software algorithms. Error handling, routing, flow control, host-to-host communications, and local area networks.

ENGT 521 ASIC Design I
(3-3-4)
Techniques for designing Application Specific Integrated Circuits (ASICs). Comprehensive study of computer concepts using computer aided design tools. Implementation of ASIC devices in digital computing systems including: modeling (using VHDL), digital synthesis, place and routing functions, and layout. Design exercises accomplished using hardware description languages and simulation. Prerequisite: VLSI or ASIC coursework or experience.
ENGT 522 ASIC Design II  
(3-3-4)  
Techniques used to transform hardware description language-based designs to physical layout. Applications of synthesis tools for floor planning and layout of Application Specific Integrated Circuits. Comprehensive study of logic design, layout generated design, and advanced CMOS circuit techniques used when designing with standard cells.  
Prerequisite: ENGT 521.

ENGT 523 Advanced ASIC Design  
(3-3-4)  
Introduction to very large scale integration (VLSI) technology and design of CMOS integrated circuits including: the device fabrication process and design rules as they apply to device layout. Analysis, design, simulation and layout rules presented. Logic gates and function design, simulation and physical layout.  
Prerequisite: ENGT 522.

ENGT 545 Advanced Microcomputers  
(3-3-4)  
Microprocessor technology and its application to the design of practical digital computing systems. Design techniques used to develop and design newer generation microprocessor-based computing systems. Assembly language programming and interfacing of microprocessor-based systems.  
Prerequisite: Microprocessor coursework or experience.

ENGT 546 Advanced Computer Architectures  
(3-3-4)  
Advanced topics in computer architectures including design of computer hardware, organizational structures, and architectural properties of parallel, vector and multiprocessing systems. Computer organizational structures of memory and I/O subsystems, multiprocessor computer architectures, and data flow computers.  
Prerequisite: Course work or experience in computer architecture and organization.

ENGT 565 Semiconductor Device Physics and Processes  
(3-0-3)  
Simple models and physical insight to solid state physics. Crystal structure and symmetry, crystal lattices, reciprocal lattices, equilibrium and nonequilibrium processes in semiconductors. Thermal properties, energy band, and semiconductor properties.

ENGT 581 Master’s Project I  
(1-9-4)  
Students prepare the proposal for the Master’s project under the guidance of a project adviser. Project proposal guidelines and accepted format presented. Approval of the proposal by the student’s project committee constitutes completion of the course.

ENGT 582 Master’s Project II  
(1-9-4)  
Students complete task specified by the project adviser. Preliminary results of the student’s project presented to the student’s project committee. Acceptance of these results constitutes completion of the course.  
Prerequisite: ENGT 581.

ENGT 583 Master’s Project III  
(1-9-4)  
Students produce the final report demonstrating the completion of the project. Final results of the student’s Master’s project presented to the student’s project committee. Acceptance of the report by the student’s project committee constitutes completion of the course.  
Prerequisite: ENGT 582.

(ENG) English

ENG 104, ENG 105, ENG 106 Introduction to Literature  
(3-0-3)  
Literature and the nature of literary experience through reading of prose and poetry drawn from American and other literatures. Works representing principal literary types are read in their entirety when possible, with emphasis on such elements as structure, style, characterization, imagery, and symbolism.

ENG 207 Seminar  
(Hours to be arranged each term.)

ENG 211 Twentieth Century Novel: Nobel Prize Winners  
(3-0-3)  
A critical analysis of the Twentieth Century novel represented by a selection of world Nobel Prize winners.

ENG 212 Twentieth Century Drama  
(3-0-3)  
Critical examination of world drama from the beginning of the Twentieth Century to the present.

ENG 235 American Multicultural Literature  
(3-0-3)  
An introductory study of short stories, poetry, essays, and a novel that illustrates the diversity of North American culture.

ENG 246 Reading for Fiction Writers  
(3-0-3)  
Examines the elements, structures and traditions of fiction writing through readings, discussions, and creative writing exercises. For students interested in writing fiction.  
Prerequisite: WRI 122.

ENG 253 American Literature I  
(3-0-3)  
A study of the realistic movement in American literature, 1800-1860, including the works of Irving, Howells, James, Cather, Crane, and Twain.

ENG 254 American Literature II  
(3-0-3)  
A study of the romantic movement in American literature, 1860-1916, including the works of Dickinson, Howells, James, Cather, Crane, and Twain.

ENG 255 American Literature III  
(3-0-3)  
A study of the major writers and movements in American literature from World War I to the present, including the works of Hughes, Faulkner, Steinbeck, Plath, Silko, Barthuleme, and Carver.

ENG 266 Native American Literature and Film  
(3-0-3)  
Explores connections to the human condition found in literature and stories authored by Native Americans with focus on a variety of themes including assimilation, ethnicity, survival and stereotyping. Documentary films and commercial cinema support and lend context to the readings. Students are encouraged to define and/or redefine their worldviews.

ENG 367 Art and Trash in Contemporary Fiction  
(3-0-3)  
In-depth study of contemporary fiction, finding meaning in literature responsive to the human condition and relevant to the reader. Includes works from authors such as Margaret Atwood, Tim O’Brien, Alice Munro and Anthony Doerr.  
Prerequisite: WRI 122.
ENG 373 British Culture and Literature: Romanticism to the Present  
(3-0-3)  
Explores features of culture and selected works and writers from the Nineteenth and Twentieth Centuries in Britain. Some film presentation included.

ENG 381 Contemporary World Literature  
(3-0-3)  
An in-depth study of selected writers and works organized thematically, geographically, and ethnically. The focus on contemporary works provides insight into current world cultures and explores globalization while encouraging students to critically examine their worldviews.  
Prerequisite: WRI 122.

ENG 387 Children’s Literature for Teachers  
(3-0-3)  
Intensive study of children’s literature, including curriculum development for teaching children’s literature, and a review of current research and literature in the field of reading instruction. The course emphasizes selection and evaluation of books.  
Prerequisite: Teacher Education candidates, junior level or above only.

ENG 407 Seminar  
(Hours to be arranged each term.)

(ENV) Environmental Sciences

ENV 112 Environmental Social Sciences  
(2-0-2)  
An introduction to the integration of science, social systems, environmental policy, and sustainability focusing on types of data, sampling techniques, and statistical methods used by social scientists. Emphasis on active learning and case study approaches.  
Prerequisites: BIO 111, BIO 112, ECO 201N, MATH 111 or instructor consent.

ENV 207 Seminar  
(Hours to be arranged each term.)  
Prerequisite: ENV major or instructor consent.

ENV 318 Systems Modeling  
(2-3-3)  
Prerequisite: BIO 213.

ENV 325 Environmental Microbiology  
(2-6-4)  
Microbial processes with emphasis on soil and water habitats. The impact of microorganisms in health, water and food sanitation, waste disposal, and bioremediation. Microscopy, laboratory, and field techniques for the isolation and identification of microorganisms.  
Prerequisites: BIO 213, CHE 223.

ENV 336 Environmental Hydrology  
(3-3-4)  
Prerequisites: BIO 225, BIO 327, MATH 252.

ENV 343 Field Methods and Data Collection  
(1-6-3)  
General principles of experimental design, site selection, and sensor selection. Use of instrumentation and data acquisition techniques from a choice of: solar monitoring and meteorological field stations, water quality, or soil monitoring locations.  
Prerequisite: CHE 342.  
Corequisite: PHY 203/PHY 223.

ENV 407 Seminar  
(Hours to be arranged each term.)

ENV 435 Atmospheric Physics  
(3-3-4)  
Prerequisites: MATH 252, PHY 202 or PHY 222.

ENV 466 Integrated Watershed Analysis  
(3-3-4)  
Land use hydrology and watershed management practices to improve and maintain water quality. Emphasis on integrated, multidisciplinary assessment methods.  
Prerequisites: CIV 467, ENV 336.  
Corequisite: CHE 465.

(GEOG) Geography

GEOG 105 Physical Geography: Geomorphology  
(3-0-3)  
Landforms and geomorphological processes, including tectonics, erosion and weathering and biological influences. Satisfies Science elective.

GEOG 106 Cultural Geography I  
(3-0-3)  
Cultural geography of the major world developed regions other than the United States – Europe, Australia and New Zealand, the former Soviet Union, Canada and Japan. The course emphasizes the regional approach.  
Prerequisite: None.

GEOG 107 Cultural Geography II  
(3-0-3)  
Cultural geography of the world’s underdeveloped realms – the countries of Middle and South Americas, Africa and Asia. The course emphasizes the regional approach.  
Prerequisite: None.

GEOG 108 Cultural Geography III  
(3-0-3)  
An introduction to cultural geography of selected world realms, namely The Middle East, South Asia, East Asia, Southeast Asia, and The Pacific Realm. Cultural imprints on the physical landscape will be discussed and regional approach emphasized.

GEOG 115 Physical Geography: Climatology  
(3-3-4)  
Weather and climate: atmospheric pressure, wind, moisture, global climate patterns, glacial processes and the hydrosphere. Analysis of weather data, satellite tracking of storms and construction of climatographs. Satisfies lab science.

GEOG 207, 307, 407 Seminar  
(Hours to be arranged each term.)

(GIS) Geographic Information Science

GIS 103 Introduction to GIS  
(0-3-1)  
Introduction to concept, basic vocabulary, and use of GIS and databases. Projections and coordinate systems. Modeling real world features using vector, raster, and linear networks. Comparison of CAD, coverage, and geodatabase models. A series of self-paced tutorials on CD.
**GIS 105 Map and Compass/GPS**  
(0-3-1)  

**GIS 205 GIS Data Integration**  
(1-3-2)  

**GIS 306 Geospatial Raster Analysis**  
(3-3-4)  

**GIS 316 Geospatial Vector Analysis I**  
(3-3-4)  

**GIS 332 Customizing the GIS Environment I**  
(3-3-4)  
Use of VBA/OOP to modify GIS GUI environment. Introduction to programming with ArcObjects and the use/creation of forms for managing data input/display. Navigation of ArcGIS UML diagrams for the creation of customized functionality. Prerequisite: GIS 134 and MIS 115.

**GIS 407 Seminar**  
(Hours to be arranged each term.)

**GIS 426 Geospatial Vector Analysis II**  
(3-3-4)  
Advanced techniques for geospatial analysis. Use and creation of dynamic segmentation, geometric networks and regions for geospatial analysis. Advanced topological relationships. Introduction to GUI customization using ArcObjects and scripting. Professional map creation skills. Prerequisite: GIS 316.

**GIS 432 Customizing the GIS Environment II**  
(3-3-4)  
Advanced use of ArcObjects to create custom GIS environments. Use of CASE tools. Students will apply skills towards the solution of various mapping requirements. Prerequisite: GIS 332.

**GIS 446 GIS Database Development**  
(3-3-4)  
Geodatabase design. Use and creation of subtypes, domains, relationship classes and validation rules. Students will apply skills towards the solution of various mapping/database requirements. Prerequisites: GIS 316 and MIS 113.

**GIS 456 GIS Management**  
(3-0-3)  
Discussion of how to implement a GIS of any scope. Role of information products in implementation process. Creation of a data design. Selection of an appropriate data model. Hardware, software and personal requirements. Prerequisites: GIS 426 and GIS 446.

**GIS 468 GIS Practicum**  
(Hours to be arranged each term.)

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**GME) Geomatics**

**GME 134 Geographic Information Systems**  
(2-6-4)  
Use of vector data, editing and querying of spatial and attribute data. Introduction to elements of map design. Use of raster data, analyzing raster surfaces. Introduction to map algebra, CAD-GIS conversion. Extensive use of ArcGIS™ software. Prerequisite: CIV 112 or GIS 103.

**GME 161 Plane Surveying I**  
(3-3-4)  
Fundamental concepts of plane surveying including theory of measurements, systematic and random errors. Distance and angle measurement using total stations and differential leveling. Calculation of bearings, azimuths, coordinates, area and traverse adjustments. Introduction to horizontal and vertical curve computations. Corequisite: MATH 111.

**GME 162 Plane Surveying II**  
(3-6-5)  
Use of Land Development Desktop and other software to solve and plot assignments in traverse calculations, horizontal and vertical curve alignments, profiles and calculations will be made to supplement the computer calculations. Prerequisites: CIV 112, GME 163.

**GME 242 Land Descriptions and Cadastre**  
(2-3-3)  
Real property descriptions and land record systems. Emphasis on interpreting and writing land descriptions, research in land records and multipurpose cadastre. Prerequisites: GME 161, GME 241, both with grade “C” or better.

**GME 244 Digital Design for Surveying**  
(1-6-3)  
Use of Land Development Desktop and other software to solve and plot assignments in traverse calculations, horizontal and vertical curve alignments, profiles and calculations will be made to supplement the computer calculations. Prerequisites: CIV 112, GME 163.

**GME 297 Seminar**  
(Hours to be arranged each term.)

**GME 299 Independent Studies**  
(Hour to be arranged each term.)
GME 324 Geomatics Computer Programming  
(1-6-3)  
Students develop Visual Basic programs and Excel spreadsheets to solve geomatics problems. Extensive use of Excel spreadsheets including developing custom functions and VBA extensions. Students are introduced to MS Access relational database, and develop a functioning geomatics database. Prerequisites: GME 264, MIS 115.

GME 343 Boundary Surveys  
(2-6-4)  
Planning, organizing, calculating and applying field procedures for boundary and cadastral surveys. Writing deed descriptions; researching public record systems relative to property boundaries. Prerequisites: GME 163, GME 242, both with grade “C” or better.

GME 351 Construction and Engineering Surveying  
(2-6-4)  
Organizing, planning and estimating costs for construction and engineering surveying projects. Field projects related to construction, layout of engineering works and site mapping. Prerequisites: GME 163, GME 264.

GME 372 Subdivision Planning and Platting  
(2-6-4)  
Land use planning; governmental regulations as applied to subdivisions; subdivision planning, computations and preparation of subdivision plats. Prerequisites: GME 242, GME 264, both with grade “C” or better.

GME 395, GME 495 Cooperative Field Experience  
(0-40-4)  
An approved work program related to geomatics practice involving full-time meaningful activity. The employer, type of work and level of difficulty must be approved by the Geomatics Co-op Coordinator prior to the work period. Progress reports are prepared by the student during the work period and submitted for review. A comprehensive written report is required at the end of the each co-op period. A co-op period may be three months for 2 credits or six months for 4 credits. A tuition fee is required for credits earned by co-op work experience. Prerequisites: Completed freshman year and two terms residence.

GME 396, GME 496 Cooperative Field Practice  
(0-40-2)  
Three month, two credit hour version of GME 395 and GME 495.

GME 415 Advanced Road Design  
(2-6-4)  
Complete road design project including “L” and “P” line locations; horizontal and vertical curve calculations with consideration of stopping and sight distances; earthwork and mass diagram calculations; drainage and road construction materials. Prerequisite: CIV 451 or GME 351.

GME 425 Remote Sensing  
(3-3-4)  
Overview of remote sensing and photogrammetry; geometry of vertical aerial and satellite images including parallax and stereopairs. Analytical photogrammetry collinearity and coplanarity equations and orientation matrices. Students use Leica Photogrammetry Suite software to orient an image strip, create a DEM and orthorectify an image. Prerequisites: MATH 252, PHY 222.

GME 434 Advanced Geographic Information Systems  
(2-6-4)  

GME 444 Adjustment by Least Squares  
(3-3-4)  
Theory of the least squares method and error propagation; variances and co-variances of observed, derived and adjusted quantities. Modeling of geomatics problems using different techniques of least squares. Linearization and iteration of nonlinear equations. Adjustment validation using hypothesis testing. Prerequisites: MATH 254N, MATH 361.

GME 451 Geodesy  
(4-0-4)  
Size and shape of the earth. Geometry of the reference ellipsoid. Spherical, ellipsoidal and local coordinate systems. Coordinate transformations in 2-D and 3-D. Datums and datum conversion. Reduction of field observations to the ellipsoid. The geoid, orthometric heights, and leveling. Prerequisites: MATH 254N.

GME 452 Map Projections  
(3-0-3)  
Overview of map projections used in cartography, with emphasis on conformal map projections used in the geomatics professions. Emphasis on state plane coordinate systems and local map projections. Prerequisite: GME 451 with grade “C” or better.

GME 454 GPS Applications  
(3-3-4)  
Study of the theory and operation of the Global Positioning System. Design of GPS networks in accordance with current standards and specifications. Laboratory exercises introduce the student to a variety of GPS applications. Prerequisites: GME 444, GME 451, both with grade “C” or better.

GME 466 Boundary Law II  
(3-0-3)  
Evidence, professional liability, written and unwritten transfers of land ownership and title interests. A term paper is required of each student. Prerequisites: GME 343 with grade “C” or better, WRI 327.

GME 468 Geomatics Practicum  
(1-9-4)  
Students participate in projects which integrate spatial positioning (GPS, geodesy, adjustments), boundary law, and L/GIS applications. Student teams perform research, establish and adjust a control network, perform field mapping, Students prepare final reports and L/GIS products. Prerequisites: GME 444, GME 452, GME 454, and GME 466.

GME 497 Seminar  
(Hours to be arranged each term.)

GME 498 Workshop  
(Hours to be arranged each term.)

GME 499 Independent Study  
(Hours to be arranged each term.)
(HED) Health Education

HED 207 Seminar
(Hours to be arranged each term.)

HED 240 Emergency Care and CPR
(2-0-2)
Comprehensive coverage of emergency care for a wide variety of injuries or illnesses. Course content includes artificial respiration and cardiopulmonary resuscitation, wounds, and bleeding; shock; burns; poisonings; bone, joint, and muscle injuries; cold- and heat-related injuries; alcohol and drug emergencies; and methods of transportation. Emphasis on victim examination, evaluation, and assessment tools and appropriate immediate and temporary care.

HED 246 Drugs and Alcohol Problems of Modern Society
(2-0-2)
Physiological and psychological effects of drugs, from caffeine to heroin. A brief study of neurophysiology and pharmacology. Investigation of the major drug classifications. Other topics include alcohol advertising, co-dependency, drug-affected babies, treatment and recovery, and legalization issues.

HED 250 Contemporary Health Issues
(2-0-2)
Topics related to the maintenance of a healthy lifestyle. Emphasis on lifestyle choices and behavior patterns that affect one's state of wellness. Topics include stress management; emotional, social, and spiritual well-being; nutrition, fitness and exercise; weight management; cardiovascular disease and cancer risk reduction; addictions; and other lifestyle-related health behaviors.

HED 260 Diet and Exercise for Lifetime Fitness
(2-0-2)
Practical concepts of nutrition and exercise, their role in disease risk, obesity, and weight control. Consumer concerns, advertising, fads, gimmicks. Fitness and dietary evaluations.

HED 407 Seminar
(Hours to be arranged each term.)

(HIST) History

HIST 101, 102, 103 History of Western Civilization
(3-0-3)
Development of Western civilization from early beginning to the present, with attention to political, economic, religious, social, and cultural factors. Courses need not be taken in sequence.

HIST 101: From the origins of human civilization to 1000 A.D.
HIST 102: From 1000 A.D. to 1789.
HIST 103: From 1789 to the present.

HIST 201, 202, 203 U.S. History
(3-0-3)
The historical development of the United States, its economic, political, and social institutions from the colonial period to the present. Courses need not be taken in sequence.

HIST 201: Pre-Columbian and colonial times to 1840.
HIST 202: 1840, Westward expansion and the Civil War to 1899.
HIST 203: 1900 to present.

HIST 207, 307, 407 Seminar
(Hours to be arranged each term.)

HIST 215 The American Western Experience
(3-0-3)
History of 19th century western America. Native American relations and the influence of the fur trappers, trail blazers, the railroad, the cattle industry and certain religious and ethnic groups on western development.

HIST 216 American Military History
(3-0-3)
Evolution of the conduct of war in the 20th century as a reflection of social, political, and technological developments. Course employs a case study approach focusing on a particular war of the 20th century. Wars studied may include World War I, World War II, and the Vietnam War.

HIST 224 Technology and the Ancient World
(3-0-3)
The interaction of technology and world civilization from earliest times to 1500 A.D. Topics include the development of agriculture, Greek and Roman engineering, and the technological roots of the Age of Discovery.

HIST 225 The Industrial Revolution
(3-0-3)
The economic and social roots of the Industrial Revolution, the technologies and scientific advances associated with it, and its impact on world civilization during the period 1500-1875.

HIST 226 Technology and the Modern World
(3-0-3)
The interaction of technological change and world civilization from 1875 to the present. Topics include the rise of industrial research, the origins and economic impact of mass production, and technological competition within the global economy.

HIST 335 The Engineering Profession
(3-0-3)
The emergence and development of the engineering profession in Europe and North America. Topics include the changing nature of the profession's work and institutions, the role of engineering professional societies, the relationship between engineers, engineering technologists, and engineering technicians, and the place of engineers in society.
Prerequisites: WRI 123 or WRI 227.

HIST 356 A History of Energy
(3-0-3)
Study of the emphasis societies place on the development, safeguarding and exploitation of energy resources. Development of energy resources since the Industrial Revolution; exploitation of energy resources; oil shocks of the 1970s, glut of the 1980s; the modern energy paradigm.
Prerequisite: WRI 123 or WRI 227.

HIST 392 Modern Asia
(3-0-3)
China, Japan, and Korea from the early nineteenth century to the present. Emphasis on modern political movements and economic and cultural transformation.
Prerequisite: WRI 123 or WRI 227.

(HSC) Health Sciences

HSC 115 Introduction to the Medical Sciences
(2-0-2)
Survey of medical and health-related occupations, including biomedical sciences. Discussion of health care structure, private and public entities, the research community, and trends in health education and practice.

HSC 207 Seminar
(Hours to be arranged each term.)
Prerequisite: Health Sciences major or instructor consent.

HSC 407 Seminar
(Hours to be arranged each term.)
HSC 485 Research and Project Proposal  
(3-0-3)  
General aspects of conducting research with emphasis on biomedical approaches, constructing and testing hypotheses, interpreting and validating data, assessment of selected research paper, development and submission of a research proposal.  
Prerequisite: MATH 361, Health Sciences major or instructor consent.

(HUM) Humanities

HUM 125 Introduction to Technology, Society and Values  
(3-0-3)  
An introduction to the relationship of economic, political, and social contexts to technological development with a focus on human values.

HUM 147 Introduction to Humanities I  
(3-0-3)  
Study of the ideas and values from the classical period which have profoundly influenced Western culture. Readings and discussion will focus on literature, philosophy, the arts, and religion.

HUM 148 Introduction to Humanities II  
(3-0-3)  
Study of the ideas and values from the Medieval to the Renaissance period which have profoundly influenced Western culture. Readings and discussion will focus on literature, philosophy, the arts, and religion.

HUM 149 Introduction to Humanities III  
(3-0-3)  
Study of the ideas and values from the Age of Enlightenment to the modern period which have profoundly influenced Western Culture. Readings and discussion will focus on literature, philosophy, the arts, and religion.

HUM 207, HUM 307, HUM 407 Seminar  
(Hours to be arranged each term.)

HUM 225 Contemporary Theater: Ashland Plays  
(3-0-3)  
Contemporary live drama viewed at Ashland Shake-spearean Festival Theater. Review and analysis of original script prior to play experience. Post review and analysis of play performance, content: plot, character, diction, melody, spectacle. Course may be repeated for credit.

HUM 366 Engineering, Business and the Holocaust  
(3-0-3)  
Examines three questions: what happened during the Holocaust, who was responsible, and what happened to those responsible. Topics include Nazi philosophy, anti-Semitic legislation, the camp system, German engineering and American business involvement, and aftermath.  
Prerequisite: WRI 122.

(IMGT) Industrial Management

IMGT 207 Seminar  
(Hours to be arranged each term.)

IMGT 310 Principles of Production/Operations Management  
(2-3-3)  
The functions of planning, organizing, directing and controlling as applied in the areas of production and operations. Guest speakers and faculty will explore the problems and opportunities in Production/Operations Management. Company cases and facility visits will provide the student with first-hand knowledge of contemporary P/OM issues.  
Prerequisite: BUS 215.

IMGT 311 Principles of Operations Management  
(3-0-3)  
Functions of the operations division within the organizational structure. Manufacturing and service organization trends. Capacity planning with forecasting and master scheduling. Introduction to Just-In-Time concepts.  
Prerequisite: MATH 361 and instructor consent.

IMGT 312 Operations Scheduling and Control I  
(3-0-3)  
Materials management, materials requirements planning, forecasting, inventory management, quality control, and critical path management.  
Prerequisites: IMGT 311, MIS 375.

IMGT 313 Operations Scheduling and Control II  
(2-3-3)  
Advanced applications in scheduling and master scheduling, including Just-In-Time techniques, production planning and short-term forecasting systems, and independent demand inventory management. Distribution Requirement Planning (DRP) and Manufacturing Requirement Planning (MRP II) will be covered in detail.  
Prerequisite: IMGT 312.

IMGT 326 Operational Budgeting  
(3-0-3)  
Prerequisites: BUS 215, MIS 113; and ACC 201 or BUS 321.

IMGT 336 Total Quality Management  
(3-0-3)  
Investigation of the importance and impact of Total Quality Management on successful organizations. Exploration of TQM techniques as applied to quality planning, control, and improvement. Analysis of the relationship between quality and revenue.  
Prerequisite: Junior standing.

IMGT 345 Engineering Economy  
(3-0-3)  
Coverage of compound interest, value flows, economic equivalences, depreciation, taxes and inflation.  
Prerequisite: MATH 105 or MATH 111.

IMGT 391, 392 Co-op Field Practice  
(0-9-3)  
Credit will be given for an approved work program related to the student's field of specialization for a continuous 10 week period. The employer and the type, level, and difficulty of the particular job must be approved by the Business Division prior to employment.  
Prerequisite: Two terms of residence.

IMGT 405 Reading and Conference  
(Hours to be arranged each term.)

IMGT 407 Seminar  
(Hours to be arranged each term.)

IMGT 408 Workshop  
(Hours to be arranged each term.)

IMGT 441 Operational Decision Models I  
(2-3-3)  
Application of quantitative methods for decision support under deterministic conditions. Emphasis on Linear Programming with sensitivity analysis.  
Prerequisites: MATH 361, MATH 371, MIS 375.
IMGT 442 Operational Decision Models II  
(2-3-3)
Application of quantitative methods for decision support under conditions of uncertainty. Emphasis on discrete event simulation with sensitivity analysis. Prerequisite: IMGT 441 with grade “C” or better.

IMGT 445 Project Management  
(2-3-3)
Advanced application of the Critical Path Method to organization and control of project implementation. Applications software will be used to create and evaluate project networks and to develop management reports. Prerequisite: CST 211, IMGT 457 or MIS 312.

IMGT 455 Cost Engineering and Estimating  
(3-0-3)
Evaluation of the factors of labor, material, and overhead in product costing and pricing. Implications of incremental volume in the cost estimating process. The role of process selection and improvement as a competitive tool. Prerequisite: IMGT 345.

IMGT 457 Cases in Strategic Management  
(3-0-3)
Study of complex situational problems faced by actual firms. Intensive analysis and presentation of action plans based on core courses. Prerequisites: IMGT 311, IMGT 345. Pre- or corequisite: IMGT 336.

IMGT 481 Quality Control Techniques  
(2-3-3)
Industrial quality assurance process control methods. Statistical benchmarking, standards setting, sampling methodology, mil-spec applications, control charts and automated tracing systems for high volume manufacturing applications. Prerequisites: IMGT 312, IMGT 336.

IMGT 482 Quality Management  
(3-0-3)
The industrial quality management process. Contemporary approaches to quality control organizational structures and policy. Human factors, objective setting through quality circles and team management. Prerequisite: IMGT 481 or senior status in Manufacturing Engineering Technology.

IMGT 483 Cases in Quality Management  
(3-0-3)
Review of complex quality problems and issues faced by actual firms in the service, manufacturing, and operations sectors. Intensive analysis using the case study method to explore the relationship of quality management with other management goals. Prerequisites: IMGT 482.

IMGT 486 The Lean Enterprise  
(3-0-3)
Lean thinking as applied to production and service operations. Kaizen, kaikaku, pull production and systems, value stream mapping and analysis. Standardized work charts and combination tables to streamline work content and achieve flow. Identifying sources of muda and its elimination. Prerequisite: IMGT 311.

IMGT 488 Multinational Operations  
(3-0-3)
Examination of current business issues involving international trade with emphasis on the Pacific Rim Trade Growth interlink. Study of cultural differences, transportation considerations, financial and legal entry requirements. Prerequisites: BUS 434 or IMGT 311.

IMGT 495 Senior Project Proposal  
(1-0-1)
Examination of the senior project process and requirements. Definitions of a suitable senior project topic and preparation of a formal project proposal. Topics dealing with client contact, time management and estimation, task definition, privacy and confidentiality, presentation of results. Prerequisites: WRI 227; BUS 325 or IMGT 311.

IMGT 496, 497 Senior Project  
(1-6-3)
Senior students plan, develop, and complete a project for a client or an independent research project. Periodic progress reports and presentations required. Instructor functions as a consultant. Prequisite: IMGT 495. Pre- or corequisite: BUS 445.

(JOUR) Journalism

JOUR 207 Seminar  
(Hours to be arranged each term.)

JOUR 211 Publications—Student Newspaper  
(F.W.S)(2-3-3)
Practical experience and training in the elementary principles of newspaper writing, makeup, and layout. Members of this class will publish the student newspaper.

JOUR 224 News and Editorial Functions  
(2-3-3)
Recommended for pre-journalism majors; open to non-majors. Survey and criticism of communication media; discussion of journalistic techniques.

JOUR 225 Introduction to Advertising  
(2-3-3)
An overview of the principles, historical, and contemporary practice of advertising in society with emphasis on newspapers, broadcast and other media organizations; ethics and career opportunities.

JOUR 226 Production Methods  
(2-3-3)
Recommended for pre-journalism majors; open to non-majors. Survey and criticism of communication media; discussion of journalistic techniques.

JOUR 311 Advanced Publications—Student Newspaper  
(F.W,S)(1-3-3)
Advanced experience and training in principles of newspaper editing, reporting, writing, makeup, layout, and specialty areas. Members of this class will serve in the advanced areas of the newspaper staff. Prerequisite: Instructor consent.

JOUR 407 Seminar  
(Hours to be arranged each term.)

(MIS) Management Information Systems

MIS 101 Word Processing Software Laboratory  
((0-3-1)
Word processing lab using Microsoft Word software. Includes creating and editing documents, letters, Web pages, forms, labels, and newsletters, research papers, an index and table of contents.
MIS 102 Spreadsheet Software Laboratory  
(0-3-1)  
Spreadsheet lab using Microsoft Excel software. Includes creating worksheets, charts, formulas, functions, what-if analysis, sorting, multiple worksheets, workbooks, templates, pivot tables and importing of data.

MIS 103 Presentation Graphics Software Laboratory  
(0-3-1)  
Presentation graphics lab using Microsoft PowerPoint software. Creation of presentations for use on paper, overhead transparencies, on a projection device, and Internet virtual presentations. Includes use of text, graphics, charts, and multimedia applications to create professional-looking presentations.

MIS 113 Introduction to Relational Databases  
(2-3-3)  
Introduction to relational database systems, the relational model, DBMS functions, administration, design methodology, normalization, QBE and SQL. Hands-on design, development and use of a database system using the Microsoft Access software including queries, updates, reports, forms, macros and application systems.

MIS 115 Visual BASIC Programming  
(3-3-4)  
Computer concepts and problem solving methods in the Windows environment using Visual BASIC. Topics include algorithms, simple data types, condition and iterative structures, functions and procedures, and the program documentation. Prerequisite: MATH 100 or instructor consent.

MIS 116 C++ Programming I  
(3-3-4)  
Computer concepts and problem solving methods using C++ programming language. Topics include: algorithms, simple data types, conditional and iterative structures, function definition, structured programming and documentation. Cannot be taken for graduation credit if student has completed CST 116. Pre- or corequisite: MATH 111.

MIS 126 C++ Programming II  
(3-3-4)  
Solving complex problems using advanced features of the C++ language. Topics include function usage, pointer data type, dynamic memory allocation, string manipulation, and structure and union data types. Emphasis is on structured program design techniques. Cannot be taken for graduation credit if student has completed CST 126. Prerequisite: MIS 116, with grade “C” or better or instructor consent.

MIS 130 Computer Organization  
(3-3-4)  
Introduces number systems, Boolean algebra, digital logic, computer arithmetic, instruction sets, memory, system software, and network organization and architecture. Laboratory exercises on digital logic, computer architecture, machine language and assembly language programming. Completion of a programming project. Corequisite: MATH 100.

MIS 136 Object-Oriented Programming with C++  
(3-3-4)  
A study of object oriented programming using C++. Beginning and intermediate concepts are covered including classes, objects, member functions, overloading, inheritance, polymorphism, templates, and virtual functions. This course prepares students with a strong C background for upper-division coursework using C++. Cannot be taken for graduation credit if student has completed CST 136. Prerequisite: MIS 126, with grade “C” or better.

MIS 206 Introduction to Management Information Systems  
(3-0-3)  
Introduction to state-of-the-art business information systems. Acquiring, processing and distributing information in a technological environment. The MIS organization: its place in business, key trends and implications. Introduction to computing hardware. Corequisite: MATH 113 or instructor consent.

MIS 207 Seminar  
(Hours to be arranged each term.)

MIS 215 Business Application Programming  
(3-3-4)  
Object-oriented and/or procedural languages employed with an emphasis on structured design, user interface design and error processing. Advanced language elements and program structures. Prerequisites: MATH 111 and MIS 115, or one term of programming and instructor consent.

MIS 217 Introduction to Health Care Industry  
(3-0-3)  
Overview of functions in U.S. health care systems. Historical evolution of health care is examined. Forms of provider models and service delivery systems are introduced. Roles of participants and interactions between health care providers and the insurance industry are examined. Financing aspects of health care and their influence on health care delivery and quality are outlined.

MIS 225 Business on the Internet  
(3-3-4)  
The role of the Internet and related technologies in modern business and electronic commerce. Hands on course for creating dynamic Web pages. Emphasizes Internet marketing and Web page editor with hyper text markup language (HTML) with some exposure to Java Script. Prerequisite: MIS 113 or instructor consent.

MIS 255 Introduction to Health Informatics  
(3-0-3)  
The discipline of health informatics is introduced, including history, basic knowledge of health informatics, data management, vocabularies, standards and tools as applied in support of health care delivery.

MIS 256 Hardware/Software Integration  
(3-3-4)  
An overview of personal computer technology: comparing components such as display, CPU, memory units and peripherals. Setting standards for selecting, maintaining and supporting automated business information systems. Relationship of systems and applications software to available system software, hardware and selected peripherals. In-depth software comparison, user rating, security and error recovery techniques. Prerequisite: MIS 206 with grade “C” or better; or instructor consent.

MIS 312 Systems Analysis  
(4-0-4)  
Analysis and design of computerized business systems. Systems Development Life Cycle, entity relationships, data flow diagrams, prototyping and other forms of data or system modeling. Designing, selecting and installing new systems for end users. Includes cost/benefit and value added evaluations. Prerequisite: MIS 206 with grade “C” or better; or instructor consent.
MIS 313 Relational Database Systems (3-3-4)
Prerequisite: MIS 312 with grade "C" or better and one programming course; or instructor consent.

MIS 315 Computer Software Techniques (3-0-3)
Lectures are divided between data structures and operating systems. Data structures section involves data representation, B-trees, graphs, and files. Operating systems section involves process, memory, and file management as related to UNIX. Cannot be taken for graduation credit if student has completed CST 313.
Prerequisite: MIS 126 with grade "C" or better.

MIS 325 Computer Networks I (3-3-4)
Network concepts including history, evolution, emerging technologies; standards; the OSI model; protocols; transmission analysis; packet interception and decom-position; network tools and performance evaluation.
Prerequisites: MIS 256 with grade "C" or better and a programming language.

MIS 331 Introduction to Oracle DBMS and PL/SQL (3-3-4)
Database programming using the Oracle Database Management System (DBMS) environment. Hands on development using the Programming Language for Structured Query Language (PL/SQL) covering the following topics: Structure, query, add, update, delete data, restricted rows and columns, joins, built-in functions, sub-queries, rollback, view management, privilege management, and triggers.
Prerequisite: MIS 313

MIS 335 Database Programming (2-3-3)
Intensive experience creating a complete database application. Programming constructs and data management in single and multi-user configurations, and in batch and online systems. Data storage, data retrieval, user interface, and report generation considerations.
Prerequisites: MIS 313 with grade "C" or better and two programming courses; or instructor consent.

MIS 345 Health Care Information Systems Management (3-0-3)
Information systems within healthcare organizations are examined. Business, clinical, and healthcare delivery processes are identified as they relate to data acquisition and information systems. Key issues confronting design, organization and management of healthcare systems are identified, examined, and solutions are explored and developed.
Prerequisite: MIS 217.

MIS 357 Information and Communication Systems in Health Care (2-3-3)
Addresses the role of computer-based information and communications systems in patient care and health care administration, including hands-on experience with the acquisition, storage and use of information in the electronic medical record and systems such as PACS, lab and pharmacy systems and computerized provider order entry (CPOE).
Prerequisite: MIS 217.

MIS 375 Decision Support Systems (2-3-3)
Use of personal computer application programs for analysis and reporting, problem solving, and decision assistance.
Prerequisite: MIS 206 with grade "C" or better, MATH 361 and MATH 371.

MIS 390, 490 Co-op Field Experience (Hours to be arranged each term.)
An approved work program related to the student's field of specialization for a continuous three-month or six-month period. The employer type, level, and difficulty of the particular job must be approved by the student's adviser prior to the employment period. A written comprehensive report of activities must be submitted during the following term of residence.
Prerequisites: All MIS 100 and 200 level courses.

MIS 405 Reading and Conference (Hours to be arranged each term.)

MIS 407 Seminar (Hours to be arranged each term.)

MIS 408 Workshop (Hours to be arranged each term.)

MIS 414 Information Systems Development (2-3-3)
Review of systems analysis. Tools, techniques, and reference sources used to research, configure and justify the hardware, software, staff, and facilities required for a computer system. Changeover, file conversion and testing. Post-installation audit, backup, security and privacy.
Prerequisites: MIS 312 and a programming language.

MIS 445 Legal, Ethical and Social Issues in Health Care Technology (3-0-3)
Legal, ethical, and social issues in health care, especially as they impact systems design, development, use, and management will be examined.
Prerequisites: MIS 217 and MIS 345.

MIS 457 Computer Networks II (3-3-4)
Network administration with focus on needs analysis; design topologies; user account management; internal and external security, firewalls, proxy servers; and performance tuning.
Prerequisite: MIS 325 with grade "C" or better.

MIS 479 Current Topics in Information Technology (3-0-3)
Advanced topics focusing on special interests and newly developed technology in IT. Concentration on a current subject such as client/server architecture, networking, telecommunications, database technology, programming, the Internet, ethics, security and privacy of information.
Prerequisite: MIS 375 or instructor consent.

MIS 489 Cases in Management Information Systems (3-0-3)
Capstone course analyzing and solving complex problems in integrated business systems. Case studies of contemporary companies are reviewed, analyzed, documented, and presented. Student teams learn the dynamics of global company operations through computer based simulations.
Prerequisites: Completion of all 300-level courses specified in the MIS program.
MIS 495 Senior Project Proposal

Examination of the senior project process and requirements. Definition of a suitable senior project topic and preparation of a formal project proposal. Topics dealing with client contact, time management and estimation, task definition, privacy and confidentiality, presentation of results.
Prerequisites: Completion of all 300 level courses specified.

MIS 496, MIS 497, MIS 498 Senior Project

(1-6-3)
Senior project students will plan, develop, and carry through to completion a management information systems project for a client they select. Formal proposal, progress reports and project demonstration/presentation. The instructor serves as the student's consultant.
Prerequisite: For MIS 496–MIS 495, For MIS 497–MIS496, for MIS 498–MIS 497, all with grade “C” or better.

(MFG) Manufacturing Engineering Technology

MFG 101 Introduction to Manufacturing

(2-3-3)
An introduction to the manufacturing engineering technology discipline, Orientation to the use of personal computers, Instruction in problem solving and laboratory procedures emphasized. Laboratory provides demonstration and practice in a variety of manufacturing equipment and procedures.

MFG 103 Introductory Welding Processes

(2-3-3)
Applications of welding in modern industry. Topics include: Oxyacetylene welding and cutting, shielded metal arc welding, gas tungsten arc welding, gas metal arc welding, and robotic welding.

MFG 112 Introduction to Manufacturing Processes

(3-0-3)

MFG 120 Manufacturing Processes I

(2-6-4)
An introductory course in metal removal processes emphasizing drilling, milling, and lathe processes. Includes tool bit grinding. Emphasis on production speeds and feeds.
Prerequisites: MATH 100, MET 111.

MFG 204 Data Management

(2-0-2)
Current topics in data acquisition and management.

MFG 207 Seminar

(Hours to be arranged each term.)

MFG 220 Manufacturing Processes II

(2-3-3)
Advanced concepts in material removal. Turning, milling, shaping, and drilling. Cutting tools and cutting requirements.
Prerequisites: MET 160, MET 241, MFG 120.

MFG 223 Casting and Molding Processes

(3-3-4)
Casting and molding processes including: pattern making, casting and molding methods, mold and core making, pouring, cleanup, sand conditioning and testing, quality considerations and economic factors.
Prerequisites: ENGT 115, MET 160.

MFG 245 Electronics Manufacturing

(3-0-3)
Processes and materials specific to the production of printed circuit board and integrated circuit components. Topics include surface mount technology, vacuum system theory, photolithography, etching and deposition processes, microbonding, and component packaging.
Prerequisites: CHE 101, MET 112.

MFG 275 CAD for Manufacturing

(2-3-3)
Computer aided drafting for manufacturing. Presents equipment and programs from the user's perspective. Topics include construction principles, input schemes, command structures, and data management.
Prerequisite: One computer language.

MFG 295 Individual Studies

(Hours to be arranged each term.)

MFG 298 Reading and Conference

(Hours to be arranged each term.)

MFG 299 Laboratory Practice

(Hours to be arranged each term.)

MFG 313 Manufacturing Analysis and Planning

(3-0-3)
Analysis and planning of manufacturing methods, procedures and equipment. Includes designing for manufacturing efficiency, tolerance analysis, equipment and resource allocation and scheduling.
Prerequisites: ACC 333 or IMGT 310 or MFG 120.

MFG 314 Geometric Dimensioning and Tolerancing

(2-3-3)
The study and application of ANSI and ISO geometric dimensioning and tolerancing principles and practices relative to product design and manufacturing operations.
Prerequisites: MATH 112, MET 241.

MFG 315 Geometric Dimensioning and Tolerancing Laboratory

(0-3-1)
Laboratory exercises using parts that have geometric drawing requirements.
Corequisite: MFG 314.

MFG 316 Metrology

(1-3-2)
Measurements by mechanical, electronic, and optical methods related to industrial dimensional confinement requirements. Drawing and part compliance methods, including geometric dimensioning verification techniques.
Prerequisites: ACC 333 or IMGT 310 or MFG 275 or MFG 314.

MFG 317 Machine Element Design

(3-0-3)
Stress calculations and design of machine elements for general applications. Theories of failure, fatigue considerations, and material selection of shafts and associated parts, gear and belt drives, bearings, power screws, threaded fasteners, riveting, welding, and springs.
Prerequisites: ENGR 213 or ENGT 231 and MET 241, or instructor consent.

MFG 325 Principles of Metrology, Machining and Welding

(3-3-4)
Measuring techniques using precision devices. Metal removal processes such as lathe, mill, and grinder. Correct use of tools and cutting parameters. Basic welding processes and theory.
MFG 326 Solid Mechanics
(3-0-3)
Concentrated study of statics and strength of materials comprising the principles of equilibrium, strain-stress relationships, and analysis of internal stresses for different loading systems. Prerequisite: MATH 112.

MFG 331 Industrial Controls
(2-3-3)
Fundamentals of control of manufacturing processes. Applications of relay logic, input and output devices, and programmable logic controllers (PLC). Design of complete control circuits, selection of components, and cost estimation. PLC programming for discrete event control and for analog applications. Prerequisite: MFG 326.

MFG 333 Statistical Methods for Quality Improvement
(3-0-3)

MFG 334 Manufacturing Group Project
(1-6-3)
Development of a product by a group of manufacturing students working together. This includes creating or modifying the design of the product, writing operation sheets, specifying materials, tools and equipment needed, design of special tooling, setup and operation of equipment and actual manufacturing of the project. Prerequisite: MFG 342.

MFG 341 Numerical Control Programming
(2-3-3)
Introduction to manual numerical control programming. Includes interpreting part drawings, process planning, machining setup and sequence. Program debugging and introduction to tool path simulation and computer-aided programming tools. Prerequisites: MATH 112, MFG 120, MET 241.

MFG 342 Computer Aided Machining
(2-3-3)
Development of CNC machine tool manufacturing programs using computer-aided process planning and advanced CAD/CAM software. Emphasis on analysis and planning required for successful CNC production, development of CAD drawings and solid models for CAM program development, toolpath simulation, and manufacturing engineering issues. Prerequisites: MFG 341, MET 375.

MFG 343 Manufacturing Tool Design
(3-0-3)

MFG 344 Design of Manufacturing Tooling
(2-3-3)
Using material from prior courses students work in individual and team design projects. Design and analyze a variety of manufacturing fixtures, jigs, molds, and stamping dies. Prerequisites: MET 241, MFG 343.

MFG 351, MFG 352, MFG 353 Microelectronics Manufacturing Processes I, II, III
(3-0-3)
A three term sequence providing in-depth theory of the processes used in the manufacture of electronic components. Primary topics include integrated circuits, printed circuits, electronic assembly, Vacuum system theory, photolithography, process specific chemistry, etching and deposition processes, and surface mount technology. Prerequisites: For MFG 351–CHE 101, PHY 202. Prerequisite: For MFG 352–MFG 351. Prerequisite: For MFG 353–MFG 352.

MFG 404 Co-op Field Practice
(Terms and hours to be arranged with approval of the curriculum coordinator.) An approved work program related to the student's field of specialization for a continuous three-month period. The employer and the type, level, and difficulty of the particular job must be approved prior to the employment period. A written comprehensive report must be submitted during the following term of residence.

MFG 405 Reading and Conference
(Hours to be arranged each term.)

MFG 407 Seminar
(Hours to be arranged each term.)

MFG 408 Workshop
(Hours to be arranged each term.)

MFG 415 Finishing Methods
(2-0-2)
Review of material finishing technologies with focus on functional requirements of final product, life-cycle environmental considerations, and manufacturing technologies for material finishing. Prerequisite: MET 160.

MFG 420 Manufacturing Processes III
(3-0-3)
Introduction to less conventional and recently developed manufacturing processes and materials. Emphasis on understanding unique characteristics, advantages, limitations, and applications. Analysis required for selection of appropriate materials and processes. Examples of computer programs that aid the selection process. Prerequisites: MATH 112; and MFG 220 or MFG 325; and PHY 201/PHY 221.

MFG 425 Plastic Manufacturing Processes
(2-3-3)
Fundamentals of polymer science and plastic manufacturing methods. Introduction to the effect of chemistry and morphology of plastics on material selection, product design, and process design. Emphasis is on thermoplastic processes such as injection molding. Prerequisites: MET 160 and MET 375, or instructor consent.

MFG 428 Manufacturing Engineering Certification
(1-0-1)
Students are required to take the Certified Manufacturing Engineer Exam or Certified Manufacturing Technician Exam offered by the Society of Manufacturing Engineers. Prerequisite: Graduating senior.

MFG 444 Assembly and Testing Methods
(2-3-3)
Manufacturing tooling design methods and technologies involved in product assembly and testing. Focus is on product analysis to specify and design cost-effective, high-quality, high-yield assembly and test methods and equipment. Prerequisites: MFG 314, MFG 333; or ACC 333 or IMGT 310.
MFG 445 Plant Layout and Handling Systems  
(3-0-3)  
In-depth study of facilities planning for manufacturing engineers. Focus is on layout optimization algorithms and applications, work cell design, warehouse design, materials handling systems, process/product/material/labor cost estimates and evaluations, and agile manufacturing. Prerequisites: MFG 112, MFG 313.

MFG 447 Lean Manufacturing  
(3-0-3)  
Introduction of principles, techniques and skills of lean manufacturing. Process optimization and quality improvement for manufacturing. Plant layout, design and job scheduling. JIT skills, such as Kaizen, Kanban, value added analysis and one piece flow to reduce inventory and waste. Prerequisites: MFG 313 and MFG 333.

MFG 453 Automation and Robotics in Manufacturing  
(2-3-3)  
Study of the appropriate level of manufacturing automation based upon economics and productivity. Discussion of robotics and a study of automated manufacturing including automatic machine design and material handling. Prerequisites: ACC 333 or IMGT 310 or MFG 341.

MFG 454 Thermal Systems for Manufacturing  
(3-0-3)  
Fundamentals of thermal energy analysis, including introduction to thermodynamics and heat transfer. Emphasis is on solving manufacturing related problems in thermal process control and analysis. Prerequisite: MATH 252.

MFG 455 Computer Integrated Manufacturing  
(3-0-3)  
Philosophy of manufacturing encompassing activities necessary to transform purchased materials into product, to deliver product to the customer, and to support the performance of the product in the field. Presentation of current concepts of manufacturing and integration of information through the use of computers. Prerequisites: ACC 333 or IMGT 310 or MFG 313.

MFG 456 Materials Science  
(3-0-3)  
Study of the relationship of a material’s structure to its properties. Materials studied include nonferrous metals, polymers, ceramics, composites, and electronics materials. Prerequisite: MFG 420.

MFG 461 Senior Project I  
(1-6-3)  
The first term of the three-term comprehensive capstone manufacturing project. This term concentrates on the development and presentation of a formal project proposal, followed by early stages of project development. Prerequisites: MFG 331, MFG 342, MFG 313; or instructor consent. Corequisite: WRI 321.

MFG 462 Senior Project II  
(0-9-3)  
The second term of a three-term project. This term concentrates on material acquisition and process development. Prerequisite: MFG 461.

MFG 463 Senior Project III  
(0-9-3)  
The final term of a three-term project. Process refinement and production of the product agreed to during the proposal phase. Requires formal reporting and presentation. Prerequisite: MFG 462.

MFG 465 Advanced Welding Methods  
(3-0-3)  
High energy density, solid state, and plastics welding processes. Welding metallurgy supports, metal combination choices and solutions to typical welding problems. Codes, procedure qualification, welding design and nondestructive testing. Prerequisites: MET 160, MFG 103.

MATH 70 Elementary Algebra  
(F,W,S)(4-0-4)  
For students whose preparation contains no algebra background or whose placement examination scores do not qualify for entry into Intermediate Algebra. The topics covered stress the fundamental properties of algebra, solving equations, and manipulating algebraic fractions. Credits earned apply for enrollment (eligibility) but do not apply toward a degree. An additional fee is required above regular tuition. Prerequisite: MATH 20 with grade “C” or better, or equivalent.

MATH 97 Algebra Review  
(1-0-1)  
Structured review for students whose Math Placement score may not reflect an accurate evaluation of their algebra background. This is strictly a Distance Education course with individualized directed study using a comprehensive programmed instructional technology. Course is only offered in Summer term following each ROAD registration. Students receive a conditional waiver of Math Placement score and are allowed to register in a higher level math course for Fall term. Course is also appropriate for those students who merely want a refresher but do not require a placement waiver. Course will not serve as a replacement for any existing OIT math course, nor will it substitute as a prerequisite for a math course. Course is graded P/W.

MATH 100 Intermediate Algebra  
(F,W,S)(4-0-4)  
Fundamentals of algebra, linear and quadratic equations, systems of equations, inequalities, functions and graphs, radicals and exponents, and stated problems. (May not be used for graduation credit.) Prerequisite: MATH 70 with grade “C” or better, or equivalent.

MATH 101 Accelerated Algebra  
(70, 100, 111)(4-0-4)  
An accelerated algebra course with topics ranging from Elementary Algebra (MATH 70) to College Algebra (MATH 111). For entering students with good high school algebra backgrounds. All students will start in Elementary Algebra, and may receive credit for one of MATH 70, MATH 100, or MATH 111, depending on individual level of achievement. An additional self-support course fee is required.
MATH 105 Collegiate Mathematics  
(F, W, S)(4-0-4)  
A variety of modern mathematical topics based on contemporary applications. Topics include combinatorics, probability, statistics, finance, matrices, and logarithmic and exponential functions. Prerequisite: Intermediate Algebra with grade “C” or better.

MATH 111 College Algebra  
(F, W, S)(4-0-4)  
Study of functions including graphs, operations and inverses. Includes polynomial, rational, exponential, logarithmic functions and their applications, and systems of equations. Prerequisite: MATH 100 with grade “C” or better, or equivalent.

MATH 111A, MATH 111B College Algebra  
(111A FW; 111B WS)(1-2-2)  
For students requiring Math 111 but desiring to learn the material at a slower pace. Math 111 content covered upon completion of MATH 111A and MATH 111B. Prerequisite: For MATH 111A—Math 100 with grade “C” or better, or equivalent. Prerequisite: For MATH 111B—Math 111A with grade “C” or better.

MATH 112 Trigonometry  
(F, W, S)(4-0-4)  
The trigonometric functions and their applications. Topics include graphs, identities, trigonometric equations, vectors, and complex numbers. Prerequisite: MATH 111 with grade “C” or better, or equivalent.

MATH 207 Seminar  
(Hours to be arranged each term.)

MATH 211 Fundamentals of Elementary Mathematics I  
(F)(3-3-4)  
This is the first course in the mathematics sequence for prospective teachers. Topics include problem solving strategies, set theory, numeration, computational algorithms for whole numbers and integers, estimation, relations and calculators as problem solving tools as well as manipulatives and computers to help deepen understanding. Prerequisite: MATH 100 or equivalent with grade “C” or better.

MATH 212 Fundamentals of Elementary Mathematics II  
(W)(3-3-4)  
This is the second course in the mathematics sequence for prospective teachers. Topics include decimals, percents, ratios and proportions, real numbers, probability and statistics. Course content is taught using calculators as problem solving tools as well as manipulatives and computers to help deepen understanding. Prerequisite: MATH 211 with grade “C” or better.

MATH 213 Fundamentals of Elementary Mathematics III  
(S)(3-3-4)  
This is the third course in the mathematics sequence for prospective teachers and covers basic geometry. Topics include geometric shapes and their properties, measurement, congruence and similarity, and coordinate and transformational geometry. Course content is taught using calculators as problem solving tools as well as manipulatives and computers to help deepen understanding. Prerequisite: MATH 211 with grade “C” or better.

MATH 211 Fundamentals of Elementary Mathematics I  
(F, W, S)(4-0-4)  
This is the first course in the mathematics sequence for prospective teachers and covers basic geometry. Topics include geometric shapes and their properties, measurement, congruence and similarity, and coordinate and transformational geometry. Course content is taught using calculators as problem solving tools as well as manipulatives and computers to help deepen understanding. Prerequisite: MATH 100 with grade “C” or better.

MATH 212 Fundamentals of Elementary Mathematics II  
(W)(3-3-4)  
This is the second course in the mathematics sequence for prospective teachers. Topics include decimals, percents, ratios and proportions, real numbers, probability and statistics. Course content is taught using calculators as problem solving tools as well as manipulatives and computers to help deepen understanding. Prerequisite: MATH 211 with grade “C” or better.

MATH 213 Fundamentals of Elementary Mathematics III  
(S)(3-3-4)  
This is the third course in the mathematics sequence for prospective teachers and covers basic geometry. Topics include geometric shapes and their properties, measurement, congruence and similarity, and coordinate and transformational geometry. Course content is taught using calculators as problem solving tools as well as manipulatives and computers to help deepen understanding. Prerequisite: MATH 211 with grade “C” or better.

MATH 221 Introduction to Computational Software  
(2-0-2)  
Solve applied problems involving formulas, functions, summation and iteration using Excel and MATLAB. Use built-in functions and graphing capabilities of MATLAB and Excel. Do vector and matrix calculations and write function files using MATLAB. Write and execute macros in Excel. Prerequisite: MATH 112.

MATH 243 Introductory Statistics  
(4-0-4)  
Descriptive statistics, numerical and graphical presentation of data, estimation and margin of error, hypothesis testing, correlation; interpretation of statistical results. Cannot be taken for graduation credit by students who have taken MATH 361. Prerequisite: MATH 100 or instructor’s consent.

MATH 251 Differential Calculus  
(F, W, S)(4-0-4)  
Theory, computational techniques and applications of the derivative. Prerequisite: MATH 112 with grade “C” or better, or equivalent.

MATH 252 Integral Calculus  
(F, W, S)(4-0-4)  
Computational techniques for and applications of the definite and indefinite integrals. Prerequisite: MATH 251 with grade “C” or better.

MATH 253N Sequences and Series  
(4-0-4)  
Indeterminate forms and improper integrals. Infinite sequences and series, convergence, power series. Taylor series and applications. This course replaces MATH 254. Prerequisite: MATH 252 with grade “C” or better.

MATH 254N Vector Calculus I  
(F, W, S)(4-0-4)  
Vectors, vector functions, and curves in two and three dimensions. Surfaces, partial derivatives, gradients, and directional derivatives. Multiple integrals using rectangular and other coordinate systems. Physical and geometric applications. Prerequisite: MATH 252 with grade “C” or better.

MATH 255N Vector Calculus II  
(4-0-4)  
Review of vector functions, space curves, gradients, and directional derivatives. Introduction to vector analysis: vector fields, divergence, curl, line integrals, surface integrals, conservative fields, and the theorems of Gauss, Green and Stokes with applications to force, work, mass, and charge. Prerequisite: MATH 254N with grade “C” or better.

MATH 261 Introduction to Linear Algebra  
(3-0-3)  
Matrices and matrix operations, systems of linear equations, vectors in a geometric setting, projections, dot products, cross products, inverse matrices, determinants, linear transformations, Eigenvalues, Eigenvectors. Use of MATLAB or equivalent CAS and/or a graphing calculator required. Prerequisite/Corequisite: MATH 251 or instructor consent.

MATH 311 Introduction to Real Analysis  
(4-0-4)  
A one term stand-alone course on topics in real analysis, covering properties of real numbers, completeness axiom, continuity, convergence of sequences and series of numbers, convergence of sequences and series of functions. Emphasis will be placed on proofs. Prerequisite: MATH 253N, with grade “C” or better.
MATH 321 Applied Differential Equations I
(F,W,S)(3-0-3)
The first in a two term sequence on the solutions of ordinary differential equations. Introduction to differential equations, first and second order equations with applications. Prerequisite: MATH 252 with grade “C” or better.

MATH 322 Applied Differential Equations II
(4-0-4)
The second in a two term sequence on the solutions of ordinary differential equations. Introduction to systems of equations, the Laplace transform and series solutions. Prerequisite: MATH 321 and MATH 341.

MATH 327 Discrete Mathematics
(F,S)(4-0-4)
Introduction to proof and mathematical abstraction. Topics include sets, set operations, functions, relations, sequences, series, recurrence relations, mathematical induction, equivalence relations. Prerequisite: MATH 252, or junior standing and MATH 111, both with grade “C” or better.

MATH 341, Linear Algebra I
(3-0-3)
The study of vectors and matrices in Euclidean space, their geometric interpretations and application to systems of equations. Includes linear independence of vectors, basis and dimension, introduction to linear transformations, eigenvalues and eigenvectors, diagonalization, determinants. Prerequisite: MATH 254N.

MATH 342 Linear Algebra II
(3-0-3)
A continuation of the topics of MATH 341 to the setting of abstract vector spaces. Includes the study of orthogonality, inner product spaces, eigenvalues and eigenvectors, matrix decompositions and a more advanced study of linear transformations. Prerequisite: MATH 341.

MATH 361, MATH 362 Statistical Methods I, II
(361-F,W,S)(4-0-4); (362-S)(4-0-4)
Graphical representation of statistical data, measures of central tendency and variability, and elementary probability. Applications of binomial, normal, “r,” “F” and chi-square distributions; tests of hypothesis; regression and correlation analysis. Multiple regression, analysis of variance and design and analysis of experiments. Prerequisite: For MATH 361–MATH 111 or instructor’s consent. Prerequisite: For MATH 362–MATH 361 or MATH 465 with grade “C” or better.

MATH 371, MATH 372 Finite Mathematics and Calculus I, II
(4-0-4)
Linear functions, matrices, linear programming, mathematics of finance, derivatives and their applications. The integral and its applications, and calculus of several variables. Prerequisite: For MATH 371–MATH 111 with grade “C” or better. Prerequisite: For MATH 372–MATH 371 with grade “C” or better.

MATH 407 Seminar
(Hours to be arranged each term.)

MATH 421 Applied Partial Differential Equations I
(4-0-4)

MATH 422 Applied Partial Differential Equations II
(4-0-4)
The second course in a three term sequence in applied partial differential equations. Introduction to solution techniques using eigenvalues and eigenfunctions. Presentation of eigenfunctions which form orthogonal bases such as Bessel functions and Legendre polynomials. Prerequisite: MATH 421.

MATH 423 Applied Partial Differential Equations III
(4-0-4)
The third course in a three term sequence. Applications of linear and weakly nonlinear partial differential equations. Analytical solution techniques for parabolic, elliptic, and hyperbolic equations. Green’s functions, integral methods, shocks, and the method of characteristics. Prerequisite: MATH 422.

MATH 425 Vector Analysis
(3-0-3)
Operations on vectors including dot product, cross product, curl and differentiation; tangent and normal vectors; divergence with applications. Prerequisite: MATH 254N.

MATH 451 Numerical Methods I
(4-0-4)
Computer applications of matrix methods, iterative solutions of equations, and systems of equations, polynomial interpolation and curve fitting, numerical differentiation and integration. Prerequisite: MATH 252 and a programming language.

MATH 452 Numerical Methods II
(4-0-4)

MATH 453 Numerical Methods III
(4-0-4)

MATH 465 Mathematical Statistics
(W,S)(4-0-4)
Counting techniques, probability, discrete and continuous random variables and distribution functions, joint probability distributions; expected value, variance and covariance; decision making. Prerequisite: MATH 254N.

(MECH) Mechanical Engineering

MECH 160 Materials I
(2-3-3)
Survey of materials used in industry and their physical and chemical principles as they relate to structure, properties, corrosion, and engineering applications. Major consideration given to metal alloys. Introduction to polymers, ceramics and composites included. Prerequisites: CHE 221 or equivalent.

MECH 207 Seminar
(Hours to be arranged each term.)
MECH 304, MECH 404 Co-op Field Practice  
(Terms and hours to be arranged with approval of the curriculum coordinator.)  
An approved work program related to the student’s field of specialization for a continuous three-month period. The employer and the type, level, and difficulty of the particular job must be approved prior to the employment period. A written comprehensive report must be submitted during the following term of residence.

MECH 312 Dynamics II  
(3-0-3)  
Continuation of the study of kinematics and kinetics of particles and rigid bodies, with applications to mechanical systems of current interest to engineers.  
Prerequisites: ENGR 212, MATH 321.

MECH 313 Thermodynamics II  
(3-0-3)  
Application of laws and principles of thermodynamics to real thermodynamic cycles. Teaches analysis of performance and design of internal and external combustion engines, steam generators, heat pumps, compressors, and refrigeration machinery.  
Prerequisite: ENGR 355.

MECH 315 Machine Design I  
(3-0-3)  
Study of stress and fatigue analysis as applied to machine elements.  
Prerequisite: ENGR 213.

MECH 316 Machine Design II  
(3-0-3)  
Application of stress and fatigue analysis in the design and selection of machine elements.  
Prerequisite: MECH 315.

MECH 318 Fluid Mechanics I  
(3-3-4)  
Covers fluid properties, fluid statics, conservation laws of pipe flow, drag, lift fluid dynamics, measurement of flow, viscous flow, laminar, and turbulent flow, and forces due to fluid motion.  
Prerequisites: ENGR 211, PHY 221.  
Pre- or co-requisite: EE 223 or MECH 363.

MECH 323 Heat Transfer  
(3-0-3)  
An introduction to the three modes of heat transfer, conduction, convection, and radiation. Teaches the analytical and empirical techniques used for solving problems in heat transfer, including those for which computer application is most suited.  
Prerequisites: MATH 321, ENGR 355, MECH 318.

MECH 326 Electric Power Systems  
(2-3-3)  
Study related to theory and application of industrial electric power systems. Topics covered include transformers, motors, generators, motor controls, and protective devices. Prerequisites: MECH 363 and ENGR 236.

MECH 351 Finite Element Analysis  
(2-3-3)  
This course is an introduction to the use of finite element analysis (FEA) in the solution of mechanical engineering problems. Existing FEA computer codes are used. Prerequisites: MET 375, MECH 315.

MECH 360 Materials II  
(3-0-3)  
This course extends the MET 160 Materials I class using a more theoretical approach. Subjects include metals, polymers, ceramics, and composites. Prerequisites: MET 160 and CHE 201 or CHE 221.

MECH 363 Instrumentation  
(2-3-3)  
Study of measurement techniques and equipment used in mechanical engineering. Instrumentation for measurements in mechanics, thermodynamics, fluid dynamics, and electrical systems considered. Methods of calibration, correction and data reduction presented. Prerequisites: MATH 361, PHY 222. Pre or corequisite: ENGR 236.

MECH 375 Solid Modeling  
(2-3-3)  
Introduces solid modeling techniques as applied to mechanical design. Topics include extruded and swept shapes, Boolean operations, and other construction techniques. Prerequisites: MET 275.

MECH 405 Reading and Conference  
(Hours to be arranged each term.)

MECH 407 Seminar  
(Hours to be arranged each term.)

MECH 414 Introduction to Aerodynamics  
(3-0-3)  
An introductory course on the fundamentals of aerodynamics. Includes a review of the behavior of fluids in motion, definition of the important parameters in aerodynamic behavior, and study of flow about simple aerodynamic shapes. Emphasis will be placed on low-speed aerodynamics. Prerequisites: ENGR 355, MECH 318.

MECH 415 Design Project  
(2-3-3)  
This course involves using material from prior course work in individual student projects. Prerequisites: MECH 315, MECH 318, MET 275. Pre or corequisite: MECH 316.

MECH 417 Fluid Mechanics II  
(2-3-3)  
Fluid Kinematics, differential analysis, similitude and modeling, and compressible flow. Computational fluid dynamics is introduced. Prerequisites: ENGR 355, MATH 321, MECH 318.

MECH 421 Introduction to Wind Tunnels  
(2-3-3)  
An introductory course on the experimental techniques used in wind tunnel testing of aerodynamic shapes. Includes operating characteristics of wind tunnels, the characteristics of and use of models and model instrumentation, and the development of analytical techniques for reduction of wind tunnel data. Prerequisites: MECH 318, MECH 363.

MECH 427 Experiments in Thermodynamics  
(2-3-3)  
Application of laws and principles of thermodynamics to performance testing of heat engines. Teaches measurement of power, determination of efficiency, preparation of heat balances, analysis of combustion products, and preparation of engineering reports. Prerequisites: MECH 313, MECH 363.

MECH 433 HVAC  
(2-3-3)  
Heating, ventilating, and air conditioning. Application of laws and principles of thermodynamics to analysis, design, and control of mechanically-controlled environments for human comfort, animal health, and food preservation. Teaches computation of heating and cooling loads, humidity control, heating, and refrigeration. Prerequisite: MECH 323.

MECH 436 Applied Control Systems  
(2-3-3)  
An introduction to control systems. Both classic control theory and programmable logic controllers are considered. Topics include block diagrams, mathematical models, transfer functions, LaPlace transforms, frequency responses along with control components and PLC programming. Prerequisites: EE 223 or MECH 363, ENGR 212, ENGR 266, MATH 321, MECH 318.
MECH 437 Heat Transfer Laboratory  
(1-3-2)  
A study of experimental heat transfer. Methods and instrumentation used for investigating heat transfer systems will be considered. Laboratory investigations include studies of heat exchangers, forced and free convection experiments, and determination of radiation and convection coefficients. Prerequisites: MECH 323, MECH 363.

MECH 438 Reciprocating and Turbine Engines  
(3-0-3)  
Introduction to construction, operation, and theory of reciprocating and turbine engines. Students will learn engine design, history of development, theory and practice of operation. Prerequisites: MECH 313, MECH 315, MECH 318.

MECH 475 Parametric Modeling  
(2-3-3)  
Introduces feature-based parametric solid modeling techniques as applied to Mechanical Design. Emphasizes the concepts and practices of parametric modeling from the user’s perspective. Theoretical and development backgrounds are also covered. Prerequisite: MET 375.

MECH 480 Vibrations  
(2-3-3)  
An introduction to mechanical vibration. Topics include the equations of motion, resonant frequencies, mode shapes, damping and applications. The laboratory will introduce vibration instrumentation such as accelerometers and spectrum analyzers. Prerequisites: ENGR 212, MATH 321, MECH 315, MECH 363.

MECH 490 Senior Projects I  
(2-3-3)  
The first of a three-term comprehensive group design project, focusing on the design proposal. This sequence applies material from prior course work, along with concepts of project management, design optimization, and other material related to a group engineering project. Prerequisites: ENGR 355, MECH 315, MECH 318, MET 375, or instructor consent. Corequisite: WRI 321.

MECH 491 Senior Projects II  
(2-3-3)  
The second of a three-term comprehensive group design project, focusing on project design. Prerequisites: MECH 490, previous term from same instructor, or adviser and instructor consent. Corequisite: WRI 322.

MECH 492 Senior Projects III  
(1-6-3)  
The third of a three-term comprehensive group design project, focusing on project construction and testing. Prerequisites: MECH 491, previous term from same instructor, or adviser and instructor consent. Corequisite: WRI 323.

(MET) Mechanical Engineering Technology  

MET 108 Geometric Dimensioning and Tolerancing  
(2-0-2)  
The study and application of ANSI geometric dimensioning and tolerancing principles relative to the preparation of engineering drawings. Prerequisite: MET 241.

MET 111 Orientation I  
(1-3-2)  
Introduction to modern tools of engineering. Creativity in the design of systems and components; on both design and presentation teams. Identification, analysis and solutions to engineering problems. Effective communication techniques. Technical sketching and isometric drawing skills.

MET 112 Orientation II  
(1-3-2)  
Continuation of MET 111. This sequence will introduce the students to economic, environmental, social, political, ethical, health and safety realities of the campus and the engineering workplace; as well as club, networking and internship opportunities. Prerequisite: MET 111.

MET 160 Materials I  
(2-3-3)  
Survey of materials used in industry and their physical and chemical principles as they relate to structure, properties, corrosion, and engineering applications. Major consideration given to metal alloys. Introduction to polymers, ceramics and composites included. Prerequisites: CHE 101/CHE 104 or CHE 201/CHE 204.

MET 207 Seminar  
(Hours to be arranged each term.)

MET 218 Fluid Mechanics  
(3-3-4)  
Covers fluid properties, laws of fluid statics, and fluid dynamics, measurement of flow, viscous flow, laminar, and turbulent flow, flow in ducts, forces due to fluid motion, and fluid machinery. Prerequisites: MATH 112, PHY 201, or PHY 221.

MET 241 CAD for Mechanical Design I  
(1-3-2)  
Computer aided drafting (CAD) for mechanical design. The focus of this course is the construction of 2-D drawings using current industry software. Topics include construction principles, input schemes, command structures, and data management. Prerequisite: MET 112.

MET 242 CAD for Mechanical Design II  
(1-3-2)  
Computer aided drafting (CAD) for mechanical design. The focus of this course is the construction of drawing sets using current industry software. Topics include detail part drawings, assembly drawings, and an introduction to 3-D drafting. Prerequisite: MET 241.

MET 298 Reading and Conference  
(Hours to be arranged each term.)

MET 299 Laboratory Practice  
(Hours to be arranged each term.)

MET 304, 404 MET Co-op Field Practice  
(Terms and hours to be arranged with approval of the curriculum coordinator.)

An approved work program related to the student’s field of specialization for a continuous three-month period. The employer and the type, level, and difficulty of the particular job must be approved prior to the employment period. A written comprehensive report must be submitted during the following term of residence.

MET 313 Applied Thermodynamics  
(3-0-3)  
Application of laws and principles of thermodynamics to real thermodynamic cycles. Teaches analysis of performance and design of internal and external combustion engines, steam generators, heat pumps, compressors, and refrigeration machinery. Prerequisite: ENGR 355.
**MET 315 Machine Design I**  
(3-0-3)  
Knowledge and skills developed in preceding courses are extended and applied to design and selection of machine elements and machines. Attention is given to functional requirements, methods of manufacture, choice of materials, and economic factors.  
Prerequisites: ENGR 213, MET 160; PHY 201 or PHY 221.

**MET 316 Machine Design II**  
(3-0-3)  
A study of power transmission systems components, their selection, and application to power transmission systems. Special consideration is given to the dynamic characteristics of the systems.  
Prerequisite: MET 315.

**MET 323 Heat Transfer**  
(3-0-3)  
An introduction to the three modes of heat transfer, conduction, convection, and radiation. Teaches the analytical and empirical techniques used for solving problems in heat transfer, including those for which computer application is most suited.  
Prerequisites: ENGR 355, MET 218.

**MET 326 Electric Power Systems**  
(2-3-3)  
Study related to theory and application of industrial electric power systems. Topics covered include transformers, motors, generators, motor controls, and protective devices.  
Prerequisites: ENGR 236.

**MET 351 Finite Element Analysis**  
(2-3-3)  
This course is an introduction to the use of finite element analysis (FEA) in the solution of mechanical engineering problems. Existing FEA computer codes are used.  
Prerequisite: MET 375.  
Pre- or corequisite: MET 315.

**MET 360 Materials II**  
(3-0-3)  
This course extends the MET 160 Materials I class using a more theoretical approach. Subjects include metals, polymers, ceramics, and composites.  
Prerequisite: MET 160.

**MET 363 Instrumentation**  
(2-3-3)  
Study of measurement techniques and equipment used in mechanical engineering. Instrumentation for measurements in mechanics, thermodynamics, fluid dynamics, and electrical systems considered. Methods of calibration, correction and data reduction presented.  
Prerequisite: PHY 202 or PHY 222.  
Pre- or corequisite: ENGR 236.

**MET 375 Solid Modeling**  
(2-3-3)  
Introduces solid modeling techniques as applied to mechanical design. Topics include extruded and swept shapes, Boolean operations, and other construction techniques.  
Prerequisite: MET 242.

**MET 405 Reading and Conference**  
(Hours to be arranged each term.)

**MET 407 Seminar**  
(Hours to be arranged each term.)

**MET 414 Applied Aerodynamics**  
(3-0-3)  
An introductory course on the fundamentals of aerodynamics. Includes a review of the behavior of fluids in motion, definition of the important parameters in aerodynamic behavior, and study of flow about simple aerodynamic shapes. Emphasis will be placed on low-speed aerodynamics.  
Prerequisites: ENGR 355, MET 218.

**MET 415 Design Project**  
(2-3-3)  
This course involves using material from prior coursework in individual student projects.  
Prerequisites: MET 218, MET 315.  
Pre- or corequisite: MET 316.

**MET 416 Energy Systems**  
(3-0-3)  
Compares available energy resources by application of laws and principles of thermodynamics. Provides computational skills for assessment of a given resource with respect to a given application. Develops understanding of energy economics.  
Prerequisites: ENGR 355, MET 326.

**MET 417 Gas Laws**  
(2-3-3)  
Application of thermodynamics and fluid mechanics to the analysis of flow of both ideal and real gasses in pipes, nozzles, diffusers, compressors and turbines. The course also emphasizes the use of appropriate instrumentation.  
Prerequisites: MET 218, MET 313, MET 363.

**MET 418 HVAC**  
(3-0-3)  
Application of laws and principles of thermodynamics to analysis, design, and control of mechanically-controlled environments for human comfort, animal health, and food preservation. Teaches computation of heating and cooling loads, humidity control, heating, and refrigeration.  
Prerequisites: ENGR 355, MET 323.

**MET 419 Control Systems**  
(3-0-3)  
An introduction to control systems. Both classic control theory and modern digital process control are considered. Topics include block diagrams, mathematical models, transfer functions, LaPlace transforms, frequency response along with control components and digital controllers.  
Prerequisites: ENGR 212, ENGR 236, ENGR 355, MET 218, MET 363.
MET 437 Heat Transfer Laboratory
(1-3-2)
A study of experimental heat transfer. Methods and instrumentation used for investigating heat transfer systems will be considered. Laboratory investigations include studies of heat exchangers, forced and free convection experiments, and determination of radiation and convection coefficients.
Prerequisites: MET 323, MET 363.

MET 438 Reciprocating and Turbine Engines
(3-0-3)
Introduction to construction, operation, and theory of reciprocating and turbine engines. Students will learn engine design, history of development, theory and practice of operation.
Prerequisites: MET 218, MET 313, MET 315.

MET 462 Vacuum Technology
(3-0-3)
An introductory course defining the role of high and ultra-high vacua in the process of high vacuum technology. Material will include such topics as vacuum pumping, vacuum gauging, processing of materials in a vacuum, evaporative deposition, sputtering, thin films, mass spectrometry, and leak detection.
Prerequisite: MET 417.

MET 465 Computational Strength of Materials
(3-0-3)
Advanced topics in structural mechanics using calculus and finite element approaches. Topics include stresses and deflections of non-uniform 2-d beams; shafts and connecting rods; axisymmetric shells; circular and rectangular plates; inertial stresses from rotation and seismic effects. Applications are emphasized.
Prerequisites: ENGT 230 and ENGT 231; or ENGR 211 and ENGR 213; MET 351 and MATH 252.

MET 475 Parametric Modeling
(2-3-3)
Introduces feature-based parametric solid modeling techniques as applied to Mechanical Design. Emphasizes the concepts and practices of parametric modeling from the user's perspective. Theoretical and development backgrounds are also covered.
Prerequisite: MET 242.

MET 480 Vibrations
(2-3-3)
An introduction to mechanical vibration. Topics include the equations of motion, resonant frequencies, mode shapes, damping and applications. The laboratory will introduce vibration instrumentation such as accelerometers and spectrum analyzers.
Prerequisites: ENGR 212, MET 315.

MET 490 Senior Projects I
(2-3-3)
The first of a three-term comprehensive group design project, focusing on project design. This sequence applies material from prior coursework, along with concepts of project management, design optimization, and other material related to a group engineering project.
Prerequisite: MET 490 previous term from same instructor, or adviser and instructor consent.
Corequisite: WRI 321.

MET 491 Senior Projects II
(2-3-3)
The second of a three-term comprehensive group design project, focusing on project design.
Prerequisite: MET 490 previous term from same instructor, or adviser and instructor consent.
Corequisite: WRI 322.

MET 492 Senior Projects III
(1-6-3)
The third of a three-term comprehensive group design project, focusing on project construction and testing.
Prerequisite: MET 491 previous term from same instructor, or adviser and instructor consent.
Corequisite: WRI 323.

(MIT) Medical Imaging Technology

MIT 103 Introduction to Medical Imaging
(3-0-3)
Orientation to the art and science of medical imaging. History and development of radiologic science, diagnostic medical sonography, vascular technology, nuclear medicine technology, medical ethics, health care industry, related professional organizations, and regulatory agencies.

MIT 107 Seminar
(Hours to be arranged each term.)

(MSC) Military Science

MSC 111 Adventure Training I
(1-0-1)
Examination and practical application of survival skills, camping, rope bridging, and basic first aid. Optional field trips offered.

MSC 112 Role of the Army
(1-0-1)
Study of the total Army, its concept and role in society. Examines missions, organization, personnel, and history of the Active Components of the Army and the Army National Guard and Reserve.

MSC 113 Adventure Training II
(1-0-1)
Examination and practical application of basic rifle marksmanship, rappelling, and mountain climbing. Optional field trips offered.

MSC 211 Land Navigation
(2-0-2)
Basic topographic map reading skills and land navigation using a lensatic compass and terrain association. Includes practical exercises.

MSC 212 Leadership and Management
(2-0-2)
Introduction to fundamental leadership and management, including problem analysis, decision-making, planning, management control, and interpersonal skills.

MSC 213 Basic Military Skills
(2-0-2)
Basic military skills in first aid; radio and wire communications; nuclear, biological, and chemical (NBC) defense; and weapons employment and operation. Note: mandatory for OCS enrollment.

MSC 214 Basic Camp
(0-6-2)
Intensive two-week precommissioning training. Oriented on leader development and individual/small unit training in a physically and mentally rigorous environment. Individual proficiency in land navigation and communication skills is evaluated. Practical experience in a variety of leadership positions is provided.

MSC 311 Military Leadership
(3-0-3)
Study of Army Command and Control and small unit leadership fundamentals. The junior officer’s role and responsibilities in the leadership process are examined. Topics such as professional ethics, soldier/team development, and Army written and oral communication skills are addressed.
Prerequisite: MSC 214.
MSC 313 Small Unit Tactics
(3-0-3)
Study of the fundamentals, techniques, and procedures of light infantry squad and platoon tactics. Develops leader skills in planning, organizing, and conducting small unit operations. Prerequisite: MSC 214.

MSC 314 Advanced Camp
(0-6-2)
Intensive two-week precommissioning training oriented on squad and platoon tactical training in a field environment. Students plan, organize, and conduct small unit operations and train in a variety of leadership positions. Located at Ft. Lewis, Washington. Prerequisites: MSC 214, MSC 311, and MSC 313.

MSC 315 Military Justice System
(3-0-3)
Examines military justice, from non-judicial punishment to the military court-martial. Introduces many practical exercises to prepare junior officers for their role in the military justice system.

MSC 411 Army Training Management
(3-0-3)
Study of the Army's training philosophy and the Army Training System. Focuses on the junior officer's role and responsibilities in the process of battle focus planning, establishing unit training programs, and executing military instruction. Prerequisite: MSC 314.

MSC 412 Military Law and Administration
(3-0-3)
Study of military justice, army personnel management, and army logistics and supply. Focus is on the junior officer's role and responsibilities in military law enforcement, officer and enlisted personnel management, resource management, and service support. Prerequisite: MSC 314.

MSC 413 Personal Affairs and Career Development
(3-0-3)
An in-depth examination of the Second Lieutenant's role in the total Army and preparation for officer commissioning in the Army National Guard. Provides critical information on topics from officer specialty selection, unit assignment, pay and benefits, training status and attendance, call-ups and mobilization, to career planning, professional development, balancing personal/family life, civilian employment, and military service. Designed for a successful transition into civil-military life. Prerequisite: MSC 314.

(MUS) Music

MUS 195 Band
(0-3-1)
(One hour each term.)

MUS 197 Chorus
(0-3-1)
(One hour each term.)

MUS 207 Seminar
(Hours to be arranged each term.)

MUS 407 Seminar
(Hours to be arranged each term.)

(NMT) Nuclear Medicine Technology

NMT 205 Nuclear Medicine Administration
(3-0-3)
Orientation to the principles of management, marketing nuclear medicine services, and administrative procedures. Prerequisite: MIT 103 with grade "C" or better.

NMT 207 Seminar
(Hours to be arranged each term.)

NMT 212 Nuclear Medicine Physics/Radiation Biophysics
(3-0-3)

NMT 215 Radiochemistry and Radiopharmacy
(3-3-4)
The design and function of radionuclide generators, labeling procedures, sterility and pyrogenicity considerations, radionuclide and radiochemical quality control procedures. Prerequisite: CHE 210, NMT 205, both with grade "C" or better.

NMT 217 Patient Care
(2-3-3)
Basic concepts of patient care, including consideration of physical and psychological needs of the patient and family. Routine and emergency patient care procedures. Infection control procedures utilizing Universal Precautions. Role of the nuclear medicine technologist in patient education. Prerequisite: MIT 103.

NMT 225 Nuclear Physics/Instrumentation
(3-3-4)
An in-depth examination of the physics in nuclear medicine, principles of detection, considerations of counting and imaging, collimators, planar imaging and associated quality assurance and control. Use of all major instrumentation in Nuclear Medicine Departments. Prerequisite: NMT 215 with grade "C" or better.

NMT 256 Cardiovascular Imaging
(2-0-2)
Introduction to Cardiovascular Imaging techniques in Nuclear Medicine including planar, SPECT, and PET imaging acquisition and processing protocols, radiopharmaceuticals, cardiac anatomy and physiology, exercise and pharmacological stress testing, and EKG principles. Prerequisites: NMT 205, NMT 215, NMT 217.

NMT 311 In-Vivo Procedures
(3-3-4)
Patient care of procedures performed in a Nuclear Medicine Department. Administration of prescribed radiopharmaceuticals. Use of imaging devices and external detectors for body organ positioning and imaging. Introduction to various acquisition and processing techniques including Static, Dynamic, and SPECT. Prerequisite: NMT 225 with grade "C" or better.

NMT 312 In-Vitro Procedures
(3-3-4)
Body composition tests such as blood volume, RBC volume. Gastrointestinal studies of substances such as iron, vitamin B-12, proteins and blood. Management of toxic chemicals, infectious biologic materials and radionuclides. Operation of laboratory instruments and equipment, including pipettes, centrifuges, PH meters, analytical balances and scintillation counters. Prerequisite: NMT 311 with grade "C" or better.

NMT 313 Therapeutic Procedures
(3-3-4)
Common therapeutic applications of radionuclides, dose ranges for each application, and proper techniques for calculating quantities of administered radiopharmaceuticals. Includes patient care, follow-up procedures and disposal of excreta. Prerequisite: NMT 312 with grade "C" or better.
NMT 325 SPECT Imaging and Computer Applications
(3-3-4)
Single photon emission computed tomography (SPECT) imaging and computer applications as applied to nuclear medicine imaging. Demonstration of computer techniques and ECG monitoring and interpretation. Theoretic basis of computer operations and medical applications in nuclear medicine. Lab experience with computerized systems, including hospital sites. Prerequisite: BIO 335 and NMT 312 with grade “C” or better.

NMT 355 Computed Tomography
(3-3-4)
X-ray physics, scanner components and data acquisition of computed tomography. Image reconstruction, manipulation and artifacts. CT patient care and imaging procedures of the head, neck, spine, chest, abdomen, pelvis and musculoskeletal system. Laboratory simulator practice on image manipulation, scan post processing and reconstruction. Prerequisite: NMT 311 with grade “C” or better.
Corequisites: NMT 367, BIO 335.

NMT 367 PET Imaging
(3-0-3)
Introduction to Position Emission Tomography (PET) imaging techniques including acquisition protocols, processing protocols, quality control procedures, radiation protection, patient screening, radiopharmaceuticals, image fusion, and imaging procedures. Prerequisite: NMT 311.
Corequisites: BIO 335, NMT 355.

NMT 388 Externship Preparation
(2-0-2)
Review and summarize key concepts in Nuclear Medicine. Focus is on patient care and interpersonal scenarios the externship student will likely face while in the hospital environment. Review and discussion of the NMT Externship Handbook and Procedures Log. Prerequisites: NMT 365, BIO 335.
Corequisites: NMT 313, NMT 325.

NMT 407 Seminar
(Hours to be arranged each term.)

NMT 410 Nuclear Medicine Technology Externship
(0-40-15)
All students must complete four consecutive terms (12 months) of clinical experience in nuclear medicine technology at an OIT approved site. Students will work under the direct supervision of a registered Nuclear Medicine Technologist. Prerequisite: All NMT courses with grade “C” or better.

(NRS) Nursing

NRS 110/NRS 210 Foundations of Nursing—Health Promotion
(9)
This course introduces the learner to framework of the OCNE curriculum. The emphasis on health promotion across the life span includes learning about self-health as well as client health practices. To support self and client health practices, students learn to access research evidence about healthy lifestyle patterns and risk factors for disease/illness, apply growth and development theory, interview clients in a culturally-sensitive manner, work as members of a multidisciplinary team giving and receiving feedback about performance, and use reflective thinking about their practice as nursing students. The family experiencing a normal pregnancy is a major exemplar. Includes classroom and clinical learning experiences. Prerequisite: Anatomy and Physiology.

NRS 111/NRS 211 Foundations of Nursing in Chronic Illness I
(6)
This course introduces assessment and common interventions (including technical procedures) for clients with chronic illnesses common across the life span in major ethnic groups within Oregon. The client and family’s “lived experience” of the illness, coupled with clinical practice guidelines and extant research evidence is used to guide clinical judgments in care to the chronically ill. Roles of multidisciplinary team in care of the chronically ill, and legal aspects of delegations are explored. Through case scenarios, cultural, ethical, health policy, and health care delivery system issues are explored in the context of the chronic illness care. Case exemplars include children with asthma, adolescent with a mood disorder, Type II diabetes, and older adults with dementia. Includes classroom and clinical learning experiences. (Prerequisite: NRS 110, NRS 210; concurrent with NRS 230 and NRS 232).

NRS 112/NRS 212 Foundations of Nursing in Acute Care I
(6)
This course introduces the learner to assessment and common interventions (including relevant technical procedures) for care of patients across the life span who require acute care, including normal childbirth. Disease/illness trajectories and their translation into clinical practice guidelines and/or standard procedures are considered in relation to their impact on providing culturally sensitive, client-centered care. Includes classroom and clinical learning experiences. Prerequisite: NRS 110/NRS 210.
Corequisites: NRS 231 and NRS 233.

NRS 221/NRS 321 Foundations of Nursing in Chronic Illness II and End-of-Life
(9)
This course builds on Foundations of Nursing in Chronic Illness I. The evidence base related to family care giving and symptom management is a major focus and basis for nursing interventions with patients and families. Ethical issues related to advocacy, selfdetermination, and autonomy are explored. Complex skills associated with symptom management, negotiating in interdisciplinary teams, and the impact of individual and family development cultural beliefs are included in the context of client and familycentered care. Exemplars include patients with chronic mental illness and well as other chronic conditions and disabilities affecting functional status and family relationships. Includes classroom and clinical learning experiences. (Can follow Nursing in Acute Care II and End-of-Life).
Prerequisites: Completion of First year of Nursing Curriculum: NRS 110/NRS 210; NRS 111/NRS 211; NRS 112/NRS 212; Nrs 230, NRS 231, NRS 232, NRS 233.

NRS 222/NRS 322 Foundations of Nursing in Acute Care II and End-of-Life
(9)
This course builds on Nursing in Acute Care I focusing on more complex and/or unstable patient care situations some of which require strong recognition skills, rapid decision making, and some of which may result in death. The evidence base supporting appropriate focused assessments, and effective, efficient nursing interventions is explored. Life span and developmental factors, cultural variables, and legal aspects of care frame the 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, family and patient teaching for discharge planning or end-of-life care. Exemplars include acute psychiatric disorders and pregnancy-related complications as well as acute conditions affecting multiple body systems. Includes classroom and clinical learning experiences. (Can follow Nursing in Chronic Illness II and End-of-Life Care).
Prerequisites: Completion of First year of Nursing Curriculum: NRS 110/NRS 210; NRS 111/NRS 211; NRS 112/NRS 212; NRS 230, NRS 231, NRS 232, NRS 233.
NRS 224 Scope of Practice and Preceptorship for AAS Completion

This course is designed to formalize the clinical judgments, knowledge and skills necessary in safe, registered nurse practice. The preceptorship model provides a context in which the student can experience the nursing work world in a selected setting, balancing the demands of job and life long learner. Faculty/preceptor/student analysis and reflection throughout the experience provide the student with evaluative criteria against which they can judge their own performance and develop a practice framework. Includes seminar, self-directed study and clinical experience. Required for AAS and eligibility for RN Licensure.

NRS 230 Clinical Pharmacology I

This course introduces the theoretical background that enables students to provide safe and effective care related to drugs and natural products to persons throughout the lifespan. Students will learn to make selected clinical decisions regarding medication administration using current, reliable sources of information, understanding of pharmacokinetics and pharmacodynamics, developmental physiologic considerations, monitoring and evaluating the effectiveness of drug therapy, teaching persons from diverse populations regarding safe and effective use of drugs and natural products, intervening to increase therapeutic benefits and reduce potential negative effects, and communicating appropriately with other health professionals regarding drug therapy. The course addresses additional classes of drugs and related natural products and physiological conditions (e.g., postpartum depression and schizophrenia) not contained in Clinical Pharmacology I. Prerequisites: NRS 230.

NRS 232 Pathophysiological Processes I

This course introduces pathophysiological processes that contribute to many different disease states across the lifespan and human responses to those processes. Students will learn to make selective clinical decisions regarding current, reliable sources of pathophysiology information, selecting and interpreting focused 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: Anatomy and Physiology sequence; Microbiology.

NRS 233 Pathophysiological Processes II

This sequel to Pathophysiological Processes I continues to explore pathophysiological processes that contribute to disease states across the lifespan and human responses to those processes. Students will learn to make selected clinical decisions regarding using current, reliable sources of pathophysiology information, selecting and interpreting focused assessments based on knowledge of pathophysiological processes, teaching persons from diverse populations regarding pathophysiological processes, and communicating with other health professionals regarding pathophysiological processes. The course addresses additional pathophysiological processes not contained in Pathophysiological Processes I. Prerequisite: NRS 232.

NRS 231 Clinical Pharmacology II

This sequel to Clinical Pharmacology I 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 regarding using current, reliable sources of information, monitoring and evaluating the effectiveness of drug therapy, teaching persons from diverse populations regarding safe and effective use of drugs and natural products, intervening to increase therapeutic benefits and reduce potential negative effects, and communicating appropriately with other health professionals regarding drug therapy. The course addresses additional classes of drugs and related natural products and physiological conditions (e.g., postpartum depression and schizophrenia) not contained in Clinical Pharmacology I. Prerequisites: NRS 230.

NRS 410 Population-Based Care: Chronic Illness and Health Promotion

This course is intended to prepare nurses in the practice of community and public health nursing enabling them to contribute to the overall public health mission of assuring conditions conducive to health at the community and population level. It examines community and public health nursing as a synthesis of knowledge from nursing, public health, and other social sciences and compliments the concurrent epidemiology and statistics courses. Students will examine frameworks of community and public health; analyze population-based health issues and conduct community assessments; and explore population-based interventions. Exemplars are selected from priority concern areas and local population needs, such as methamphetamine abuse and HIV. Includes classroom and clinical experiences. Prerequisites: NRS 110/NRS 210; NRS 111/NRS 211; NRS 112/NRS 212; NRS 230, NRS 231, NRS 232, NRS 233, NRS 222/NRS 322; NRS 221/NRS 321.

NRS 411 Epidemiology

Explores the determinants of death, disease, disability, disorders and disillusionment in mankind. Introduces principles and methods of epidemiologic investigation. Examines how properly conducted studies contribute to understanding of etiologic factors, modes of transmission, and pathogenesis. Explores social and structural determinants of the five D’s and their implications for policy and nursing practice. Prerequisite or corequisite: Statistics.

NRS 412 Leadership and Outcomes Management in Nursing

This course provides the learner with the opportunity to consider nursing practice from the vantage point of middle managers and senior leaders in the profession in selected inpatient and community settings. Focus is on use of outcome data to evaluate nursing care delivery systems and propose quality improvement initiatives, considering enduring practice issues, policy debates and historical solutions. Students will understand how nursing influences client care, its own practice and the larger health care delivery system. Includes classroom and clinical learning experiences. Prerequisites: NRS 110/NRS 210; NRS 111/NRS 211; NRS 112/NRS 212; NRS 230, NRS 231, NRS 232, NRS 233, NRS 222/NRS 322; NRS 221/NRS 321.
NRS 424 Clinical Immersion I  
(6-10)  
This course is designed to formalize the clinical judgments, knowledge and skills necessary for practice of nursing with a selected population. The experience focuses on complex clinical judgments, interdisciplinary team functioning and leadership, and the development of habits for lifelong learning. Faculty/preceptor/student analysis and reflection throughout the experience provide the student with evaluative criteria against which they can judge their own performance and develop a practice framework. Includes seminar and precepted clinical learning experience. Students who have completed NRS 224 as part of the OCNE AAS Curriculum may enroll for 6 credits.  
Prerequisites: NRS 110/NRS 210; NRS 111/NRS 211; NRS 112/NRS 212; NRS 230, NRS 231, NRS 232, NRS 233, NRS 222/NRS 322; NRS 221/NRS 321, NRS 410, NRS 411, NRS 412.  

NRS 425 Clinical Immersion II  
(10)  
A continuation of NRS 424, this course provides the student with the opportunity for developing deeper understanding of and competence in the nursing care of the selected population. The course is designed to help the learner in the transition to the work world. Emphasis is on the health care needs of the selected population, and the associated systems and policy issues. Includes seminar and precepted clinical learning experiences.  
Prerequisites: NRS 110/NRS 210; NRS 111/NRS 211; NRS 112/NRS 212; NUS 230, NRS 231, NRS 232, NRS 233, NRS 222/NRS 322; NRS 221/NRS 321, NRS 410, NRS 411, NRS 412.  

(OST) Office Systems Technology  

OST 170 Office Systems Management  
(2-3-3)  
Administrative office management concepts including telecommunications, handling of mail and use of postal systems, receptionist and general office functions, office supplies and equipment, financial responsibilities, handling meeting and travel arrangements, time management, composition, building human relations skills, career paths and job search techniques, and quality management.  
Prerequisite: Minimum keyboarding skill of 35 wpm.  

OST 207 Seminar  
(Hours to be arranged each term.)  

OST 237, OST 238 Coop Work Experience I and II  
(1-6-3)  
Approved work program related to the student's field of specialization. The employer and type of difficulty of the job must be approved by the department. A written report of work activities must be submitted by the end of the term employed. Prerequisites: OST 170 or instructor consent.  

OST 295 Individual Studies  
(Hours to be arranged each term.)  

OST 298 Reading and Conference  
(Hours to be arranged each term.)  

OST 299 Laboratory Practice  
(Hours to be arranged each term.)  

(PhIL) Philosophy  

PHIL 207 Seminar  
(Hours to be arranged each term.)  

PHIL 331 Ethics: Moral Issues in the Professions  
(3-0-3)  
The study of ethical theory and the evaluation of ethical issues in the professions. Moral issues will be selected from medicine, business, education, law and engineering. Prerequisite: WRI 123 or WRI 227.  

PHIL 407 Seminar  
(Hours to be arranged each term.)  

(PhED) Physical Education  

PHED 107 Seminar  
(Hours to be arranged each term.)  

PHED 190 Physical Education  
(0-3-1)  
Service course. General participation in physical activities to promote sound health.  

PHED 207 Major Sports Seminar  
(1-2-2)  
Development of professional competencies in fundamentals of training methods and objectives of major sports.  

PHED 291 Lifeguard Training  
(1-2-2)  
Basic skills of lifesaving in aquatic programs; American Red Cross Advanced Lifesaving Authorization.  

PHED 292 Water Safety Instructor  
(1-2-2)  
Analysis, methods of instruction, and teaching of aquatic skills; American Red Cross Authorization in Water Safety Instruction.  

(PHY) Physics  

PHY 201 General Physics  
(3-3-4)  
An introduction to physics with study of Newtonian mechanics, including kinematics, dynamics, work, energy, power, and hydraulics. All general physics students must register for a laboratory section. Prerequisite: PHY 201.  

PHY 203 General Physics  
(3-3-4)  
Wave motion, sound, introduction to geometrical and physical optics, and topics from modern physics. All general physics students must register for a laboratory section. Prerequisite: PHY 202.  

PHY 207 Seminar  
(Hours to be arranged each term.)  

PHY 215 Topics in Astronomy  
(2-3-3)  
Astronomy including a survey of the solar system, constellations, star characteristics, star groupings, galactic and extragalactic objects, stellar evolution, and instrumentation with emphasis on topics of maximum interest to the students. Prerequisite: MATH 111.  

PHY 217 Physics of Medical Imaging  
(3-0-3)  
An introduction to physics for MIT majors. Topics include: basic mechanics, basic electromagnetism, fundamentals of electronics, magnetism, sources and types of radiation, and image formation. Prerequisite: MATH 112 with grade “C” or better.
PHY 221 General Physics with Calculus  
(3-3-4)  
Basic principles of physics with emphasis on applications of calculus. Newtonian mechanics, including kinematics, dynamics, work, energy, power, and hydraulics. All general physics students must register for a laboratory section.  
Prerequisite: MATH 251 with grade "C" or better.  
Corequisite: MATH 252.

PHY 222 General Physics with Calculus  
(3-3-4)  
Temperature systems, heat, kinetic theory of gases, thermodynamics and the fundamentals of electricity and magnetism. All general physics students must register for a laboratory section.  
Prerequisite: MATH 251 with grade "C" or better.  
Corequisite: MATH 252.

PHY 223 General Physics with Calculus  
(3-3-4)  
Wave motion, sound, introduction to geometrical and physical optics, and selected topics from modern physics. All general physics students must register for a laboratory section.  
Prerequisite: MATH 252.

PHY 237 Meteorology  
(2-3-3)  
Principles of atmospheric structure and movement; horizontal and vertical motions; air masses; micrometeorology; atmospheric diffusion in relation to air pollution.  
Prerequisite: PHY 202 or PHY 222.

PHY 311, PHY 312, PHY 313 Introduction to Modern Physics  
(3-0-3)  
An introduction to physics of the 20th century, including selected topics from atomic and nuclear physics and quantum theory with applications in science and industry.  
Prerequisite: PHY 203 / PHY 223.

PHY 330 Electricity and Magnetism  
(5-0-3)  
A study of electromagnetic phenomena leading to and using Maxwell’s equations. Topics will include static fields in vacuum and in dielectric media, electric and magnetic potentials, and the energy density of electromagnetic fields.  
Prerequisite: MATH 254N, PHY 222.  
Corequisite: MATH 253N.

PHY 407 Seminar  
(Hours to be arranged each term.)

PHY 410 Mathematical Methods: Fourier Optics  
(3-0-3)  
Linear systems, Fourier transforms, and their use in optics. Topics will include special functions, orthogonal expansions, Fourier series and transforms and spectra of functions, mathematical operators, convolution, autocorrelation, cross correlation, linear systems as filters, and signal processing.  
Prerequisite: MATH 254N.

(PSCI) Political Science  

PSCI 201 United States Government  
(3-0-3)  
Basic concepts and principles of the American political system.

PSCI 207 Seminar  
(Hours to be arranged each term.)

PSCI 250 Introduction to World Politics  
(3-0-3)  
Introduction to international relations and global issues. The rise and demise of the Cold War, international efforts toward arms control, and global environmental and economic problems.  
Prerequisite: WRI 122.

PSCI 326 World Politics in Transition  
(3-0-3)  
International relations theory and world politics in the post-Cold War period. Topics include changing great power relations, conflict management, global inequalities and transnational problems.  
Prerequisite: PSCI 250.

PSCI 355 International Conflict in the 20th Century  
(3-0-3)  
The functions, origins, and forms of war in the 20th Century examined in the context of political theory and history. Case studies include World War I, World War II, Korea, Vietnam, and the Persian Gulf War.  
Prerequisite: PSCI 250.

PSCI 407 Seminar  
(Hours to be arranged each term.)

PSCI 497 United States Foreign Policy  
(3-0-3)  
The American foreign policy process, recurring themes in U.S. foreign policy, and the content of U.S. policy in such areas as Europe, Latin America, and the Middle East.  
Prerequisite: PSCI 250.

(PSG) Polysomnographic Technology  

PSG 211 Fundamentals of PSG and Patient Care  
(3-0-3)  
Basic concepts of patient care, including consideration of physical and psychological needs of the patient and family. Routine and emergency patient care procedures. Infection control procedures utilizing universal precautions. Role of the polysomnographic technologist in patient education. Ethical and legal issues.

PSG 221 Physiology of Sleep  
(3-0-3)  
Introduction to sleep architecture and the function of changes in electroencephalograms, electrocardiograms, and electromyograms. Physiology of sleep-induced alterations in pharyngeal muscle tone, autonomic control and polysomnographic staging.

PSG 231 Sleep Disorders Pathology  
(4-0-4)  
Normal and abnormal sleep disorders integrating the physiological functions of the nervous, respiratory, and cardiovascular systems. Emphasis on basic sleep sciences, physiology, diagnosis and treatment of sleep disorders.  
Prerequisite: PSG 221.

PSG 252 Clinical Polysomnographic Technology I  
(2-12-6)  
Medical terminology, instrumentation setup and calibration, recording and monitoring techniques, documentation, professional issues, and patient-technologist interactions related to polysomnographic technology.  
Pre or corequisite: PSG 211.

PSG 252A Clinical Polysomnographic Technology I, Part A  
(1-6-3)  
Medical terminology, instrumentation setup and calibration, recording and monitoring techniques, documentation, professional issues and patient-technologist interactions. This is the first half of the standard PSG 252 course.  
Pre- or corequisite: PSG 211.
PSG 252B Clinical Polysomnographic Technology I, Part B  
(1-6-3)  
Medical terminology, instrument setup and calibration, recording and monitoring techniques, documentation, professional issues and patient-technologist interactions. This is the second half of the standard PSG 252 course.  
Pre- or corequisite: PSG 252A.

PSG 253 Clinical Polysomnographic Technology II  
(2-12-6)  
Intermediate aspects of polysomnographic technology including event recognition, EEG, EMG, SaO2 and EOG readings and monitoring, therapeutic interventions, scoring, and patient-technologist interactions related to polysomnographic technology. This is the first half of the standard PSG 253 course.  
Pre- or corequisite: PSG 252.

PSG 253A Clinical Polysomnographic Technology II, Part A  
(1-6-3)  
Intermediate aspects of polysomnographic technology including event recognition, EEG, EMG, SaO2 and EOG readings and monitoring, therapeutic interventions, scoring, and patient-technologist interactions related to polysomnographic technology. This is the first half of the standard PSG 253 course.  
Pre- or corequisite: PSG 252 or PSB 252A and PSG 253B.

PSG 253B Clinical Polysomnographic Technology II, Part B  
(1-6-3)  
Intermediate aspects of polysomnographic technology including event recognition, EEG, EMG, SaO2 and EOG readings and monitoring, therapeutic interventions, scoring, and patient-technologist interactions related to polysomnographic technology. This is the second half of the standard PSG 253 course.  
Pre- or corequisite: PSG 253A.

PSG 254 Clinical Polysomnographic Technology III  
(2-12-6)  
Advanced aspects of polysomnographic technology including recognition of sleep disorders, recording and monitoring, therapeutic interventions, scoring, and Multiple Sleep Latency Tests (MSLT) and Repeated Test of Sustained Wakefulness (RTSW), advanced cardiac and neurophysiology interpretation and pharmacology of sleep.  
Pre- or corequisite: PSG 253.

PSG 254A Clinical Polysomnographic Technology III, Part A  
(1-6-3)  
Advanced aspects of polysomnographic technology including recognition of sleep disorders, recording and monitoring, therapeutic interventions, scoring, MSLTs and RTSWs, advanced cardiac and neurophysiology interpretation and pharmacology of sleep. This is the first half of the standard PSG 254 course.  
Pre- or corequisite: PSG 253 or PSG 253A and PSG 253B.

PSG 254B Clinical Polysomnographic Technology III, Part B  
(1-6-3)  
Advanced aspects of polysomnographic technology including recognition of sleep disorders, recording and monitoring, therapeutic interventions, scoring, MSLTs and RTSWs, advanced cardiac and neurophysiology interpretation and pharmacology of sleep. This is the second half of the standard PSG 254 course.  
Pre- or corequisite: PSG 254A.

PSG 264 Pediatric/Neonatal Polysomnography  
(3-0-3)  
Course Description: Presentation of theory and its practical applications in pediatric and neonatal respiratory disease states. Includes pathophysiology, etiology, patient testing, scoring and treatment.  
Pre- or corequisite: PSG 221.

(PSY) Psychology  

PSY 110 Human Services Careers  
(1-0-1)  
Introduction to the principles and applications of psychology. Topics include scientific methodology, learning, memory and cognitive processes.  
Pre- or corequisite: PSG 203.

PSY 201 Psychology  
(3-0-3)  
Introduction to the principles and applications of psychology. Topics include the brain and behavior, consciousness, sensation and perception, and health psychology.  
Pre- or corequisite: PSG 203.

PSY 202 Psychology  
(3-0-3)  
Introduction to the principles and applications of psychology. Topics include social psychology, personality, maladjustment and psychotherapy.

PSY 203 Psychology  
(3-0-3)  
Introduction to the principles and applications of psychology. Topics include social psychology, personality, maladjustment and psychotherapy.  
Pre- or corequisite: PSG 203.

PSY 207, 307, 407 Seminar  
(Hours to be arranged each term.)

PSY 215 Abnormal Psychology I  
(3-0-3)  
Overview of biological, psychological, and social causes of abnormal behavior. Specific topics include models, classification and assessment of abnormal behavior, as well as anxiety, somatoform, dissociative, personality, impulse, alcohol and substance abuse disorders.  
Pre- or corequisite: PSG 203 or instructor consent.

PSY 216 Abnormal Psychology II  
(3-0-3)  
Overview of legal and ethical issues related to abnormal psychology. Techniques of group and individual therapy. Specific disorders include: sexual and gender identity, mood, schizophrenia, cognitive, and childhood and adolescence.  
Pre- or corequisite: PSG 215 or instructor consent.

PSY 220 Community Psychology  
(3-0-3)  
Community mental health, epidemiology, program evaluation and social ecology. Research, theory and practice in community settings. The influence of community-environmental factors in individual functioning and their utilization to promote mental health.  
Pre- or corequisite: PSY 203.

PSY 301 Basic Counseling Techniques  
(3-3-4)  
Basic counseling and interpersonal skills, including reflective listening, expressing empathy, questioning, and confrontation are taught. Complex skills such as goal setting, documentation, suicide/homicide crisis intervention, and handling client noncompliance. Laboratory employs CD-ROM and role-play formats.  
Pre- or corequisite: DH 240 or PSY 216.

PSY 311 Human Growth and Development I  
(3-0-3)  
A biosocial study of human development from conception to adolescence. Discusses the biological and social processes (e.g., cognition, personality, emotion, and social) affecting the developing child. Applications to health care, family, and education are discussed.  
Pre- or corequisite: DH 240 or PSY 201.
PSY 312 Human Growth and Development II
(3-0-3)
The psychological study of the continuing development of the human being from adolescence through old age and death. Discussion focuses on the social and health care issues of adulthood. Applications to health care, family and social policy.
Prerequisite: PSY 201.

PSY 313 Psychological Research Methods I
(3-3-4)
Overview of the techniques of research in psychology. Emphasis placed on evaluating psychological measurements, reliability and validity, and interpretation of psychological data. Reviews sources of invalidity and techniques for minimizing these sources.
Prerequisites: PSY 203, MATH 243 or MATH 361, each with grade “C” or better.

PSY 314 Psychological Research Methods II
(3-3-4)
Overview of the techniques of research in psychology. Emphasis placed on techniques of quantitative research. Review of experimental, quasi-experimental, field and survey research methods.
Prerequisite: PSY 313.

PSY 317 Field Placement Seminar
(2-0-2)
Presentations and discussions of externship and laboratory sites, and skills sets involved in human service.

PSY 321, PSY 322 Theories of Personality
(3-0-3)
In-depth coverage of personality theories in terms of each theorist’s personal experiences and the theories’ major concepts and definitions of mental illness and treatment. Applications of various theoretical concepts to case studies and to people in their personal lives.
Prerequisite: PSY 201, PSY 202 or PSY 203.

PSY 325 Stress Management
(3-3-4)
Discussion of the concept of stress and its physical and psychological impact. Description of the physical and psychological stress reactions, stress related disease processes and techniques of stress management.
Prerequisite: PSY 215 or instructor consent.

PSY 330 Social Psychology I
(3-0-3)
Surveys behavior and experience in a social context. Topics include the self in the social world, attribution, attitude formation and change, cultural impacts, evolutionary psychology, social influence and conformity. Application to other fields is emphasized, e.g., health care, management, etc.
Prerequisite: PSY 203.

PSY 331 Social Psychology II
(3-0-3)
Surveys behavior and experience in a social context. Topics include social perception, the self, group dynamics, altruism, social psychology and the environment. Application to health care and management emphasized.
Prerequisite: PSY 330.

PSY 334 Behavior Modification I
(3-3-4)
Measurement of behavior and key concepts of operant learning are covered, e.g., reinforcement, extinction, punishment, stimulus control and shaping, among others. Laboratory exercises are interactive computer simulations of these concepts.
Prerequisite: PSY 203.

PSY 335 Behavior Modification II
(3-3-4)
Principles learned in PSY 334 are applied to the study of human behavior. Complex techniques and new learning concepts found in the “real world” are also covered. Treatment plans for actual human problem behaviors are created in the laboratory.
Prerequisite: PSY 334.

PSY 336 Health Psychology I
(3-0-3)
The scientific study of behavior, thoughts, attitudes, and beliefs related to health and illness. Specific areas covered include: stress, realities of health care delivery, research methods, and patient demographics.

PSY 337 Health Psychology II
(3-0-3)
The scientific study of behavior, thoughts, attitudes, and beliefs related to health and illness. Specific areas covered include: substance abuse, alcohol problems, eating disorders, AIDS, coronary health, pain, chronic illness, pediatric health, and health problems of aging.
Prerequisite: PSY 336.

PSY 339 Biopsychology
(3-0-3)
Anatomical and physiological basis of behavior patterns presented from genetic, developmental, evolutionary and functional evidence. Discussions of mind-body relationships, senses, sleep, motor activity, emotions, and reproduction.
Prerequisite: PSY 202 or BIO 232 or instructor consent.

PSY 341 Psychoactive Drugs I: Psychiatric Drugs
(3-0-3)
Physiological, behavioral, social, and societal effects of psychiatric drugs including anti-anxiety, anti-depressant, and anti-psychotic drugs.
Prerequisites: PSY 202 and PSY 216.

PSY 342 Psychoactive Drugs II: Abused Drugs
(3-0-3)
Physiological, behavioral, social, and societal effects of abused drugs including alcohol, hallucinogens, marijuana, opiates, and stimulants.
Prerequisite: PSY 341.

PSY 347 Organizational Behavior
(3-0-3)
Psychology applied to business organization and operations as they affect employees, customers, and the community with particular interest on group processes.
Prerequisite: Junior standing or instructor consent.

PSY 351 Cognitive Restructuring I
(3-3-4)
Philosophy behind criminal thinking errors, which influence their thought patterns. Laboratory component includes participation in client groups and casework.
Prerequisite: PSY 301 or PSY 334.

PSY 352 Cognitive Restructuring II
(3-3-4)
Analysis of thought patterns which cause behaviors leading clients to mandated counseling. Laboratory component includes participation in client groups and casework.
Prerequisite: PSY 351.

PSY 355 Evolutionary Psychology
(3-0-3)
Examination of biological determinants underlying human behavior. Discusses family relations, aggression, crime, mating and other social aspects with regard to adaptation and fitness.
Prerequisite: BIO 103 or BIO 213 or PSY 203 or instructor consent.
PSY 358 Psychology of Gender  
(3-0-3)  
Psychological examination of the functioning, specialization, self-concept, and roles of women and men. Issues that women and men face in the gendered world are critically analyzed scientifically and experientially.  
Prerequisite: PSY 201.

PSY 360 Organizational Psychology  
(3-0-3)  
Psychology applied to human relations problems in the work world. Specific topics include job satisfaction, motivation, leadership, attitudes and effects of stress on employees and job performance.  
Prerequisite: PSY 201.

PSY 361 Industrial Psychology  
(3-0-3)  
Application of psychological principles, theories and behavioral techniques applied to human relations, problems in industrial situations.  
Prerequisite: Junior standing or instructor consent.

PSY 364 Environmental Psychology  
(3-0-3)  
Analysis of the interaction between human behavior and the environment. Discussions focus on how the environment affects humans and how our behavior influences the environment. Topics include environmental stress, architecture, perceptions and attitudes, and behavior to save the environment.  
Prerequisite: PSY 201.

PSY 371 Human Sexuality I  
(3-0-3)  
Social, cultural, psychological and physiological influences on human sexuality are examined. Topics include: theory and research, gender, anatomy and functioning, and human relationship components, including love and communication.  
Prerequisite: PSY 201, PSY 202, or PSY 203.

PSY 372 Human Sexuality II  
(3-0-3)  
Social, cultural, psychological and physiological influences on human sexuality are examined. Topics include: sexual orientation, pregnancy, contraceptive practices, sexual dysfunctions, sexually transmitted infections, paraphilias, sexual assault, media images, the sale of sex.  
Prerequisite: PSY 371 or concurrent enrollment in PSY 371.

PSY 374 Therapeutic Communities  
(3-6-5)  
The construction of therapeutic communities. Teaches students techniques for assisting clients to support each other’s efforts at cognitive and/or behavior change. Discussion groups and on-site visits.  
Prerequisite: PSY 220.

PSY 401 Advanced Counseling Techniques  
(3-3-4)  
Major schools of psychotherapy are discussed. Students practice related techniques in the laboratory following demonstration and instruction. Group therapy techniques are emphasized with associated laboratory work using interactive CD-ROM, group therapy videotapes, and a Web site corresponding to readings.  
Prerequisite: PSY 301.

PSY 402 Applied Psychology Methods II  
(3-3-4)  
Skills training in paraprofessional counseling and assessment techniques, program development and evaluation. Interviewing, evaluation procedures, consultation, referral, seminar development and delivery are included. Individualized instruction and supervision of individual projects. Role-playing of helping skills is a major focus.  
Prerequisite: PSY 401.

PSY 403 Applied Psychology Methods III  
(2-6-4)  
Focus on application of skills and knowledge acquired in Methods I and II courses. Practicum-like experience of supervised implementation of projects created in PSY 402 (e.g., seminar delivery), or other participation in an established program, either on or off campus.  
Prerequisite: PSY 402.

PSY 410 Organizational Change and Development  
(3-0-3)  
Theories and processes necessary to understand and implement change within organizations. Focuses on impact of technological change in organizations and on skill development in planning, implementing, and evaluating change.  

PSY 416 Abnormal Behavior of Children and Adolescents  
(3-0-3)  
Highlights differences between children and adults in their expression of emotional and interpersonal problems. Language/learning disabilities, problems of attention deficit, school refusal and separation anxiety, depression, and eating. Description of symptoms and treatments are emphasized.  
Prerequisites: PSY 215, PSY 216, PSY 311, PSY 312.

PSY 420 Applied Psychology Externship  
(4, 8, 12 or 16 credit hours)  
Opportunities to work under supervision in applied settings related to student’s emphasis. Students gain experience working with mandated clients, patients in health care settings, or businesses.  
Prerequisites: PSY 317 and permission of Extern Committee.

PSY 421 Senior Project I  
(1-6-3)  
First term of a three-term comprehensive project in applied psychology. Focus on refining a research project, literature review and formulation of research question.  
Prerequisite: PSY 314.

PSY 422 Senior Project II  
(1-6-3)  
Second term of a three-term comprehensive project in applied psychology. Focus on development of research methodology and pilot testing of project.  
Prerequisite: PSY 421.

PSY 423 Senior Project III  
(1-6-3)  
Third term of a three-term comprehensive project in applied psychology. Focus on data collection, writing of research report and oral presentation of project.  
Prerequisite: PSY 422.

PSY 428 Animal Behavior  
(3-0-3)  
The biological foundations of animal behavior are presented from an ethological and comparative psychology perspective. Emphasizes the evolution, development, and physiological basis of behavior patterns and presents topics on learning, perception, orientation, communication, and social behavior. (Cannot be taken for graduation credit by students who have taken BIO 428.)  
Prerequisite: PSY 202 or BIO 213.
PSY 431 Family Therapy
(3-0-3)
Basic differences between functional and dysfunctional families. Theoretical underpinnings of family therapy, an emphasis on particular theoretical models, different family populations including single parent families, blended families and culturally diverse families. Prerequisite: PSY 301.

PSY 432 Group Therapy
(3-3-4)
Theory and application of group therapy techniques. Historical and current applications of group treatment, special populations and multicultural considerations. Prerequisite: PSY 301.

PSY 446 Psychological Trauma
(3-0-3)
Explores and introduces students to psychologically traumatic experiences in terms of definition, impact and reactions, including assessment and treatment of trauma-related psychological problems. Special focus on post-traumatic stress disorder. Prerequisites: PSY 301.

PSY 456 Performance Management
(3-0-3)
Applications of Applied Behavior Analysis in business, industry and government. Includes proposal to identify and intervene with real-life performance problem. Prerequisite: PSY 335.

PSY 464 Organizational Structure
(3-0-3)
Analysis of how organizations divide work to employees and then coordinate across employees. Describes how organizational structure changes with changing conditions. Prerequisite: PSY 361.

PSY 480 Theories of Learning
(4-0-4)
The basics of the major learning theories as they apply to operant and respondent conditioning, social learning, and memory. Prerequisite: PSY 335.

PSY 497 Special Projects/Training
(Variable Credit 1 - 6)
Students may enroll for credit in special programs offered by external agencies, approved by the department, leading to the development of specialized skills. Programs may include training to work with special populations. May be taken twice for credit. Prerequisite: Senior standing in Applied Psychology and permission of HSS department chair.

PSY 499 Independent Study
(Variable Credit 1-6)
Intensive self-study of a topic in psychology of the student's choosing. Study guided by any professor in the Applied Psychology program. May be repeated, with different topics, up to three times. Prerequisite: Senior standing in Applied Psychology and permission of HSS department chair.

(REE) Renewable Energy Engineering

REE 201 Introduction to Renewable Energy
(3-0-3)
An introduction to renewable energy. Topics include photovoltaics, solar thermal systems, green building, fuel-cells, hydrogen, wind power, waste heat, biofuels, wave power, tidal power and hydroelectric. Discussions of economic, environment, politics and social policy are integral components of the course. Prerequisite: MATH 111.

REE 243 Electrical Power
(3-3-4)
Fundamentals of electrical power; maximum power transfer, single-phase circuits, three-phase circuits, wye-delta transformations, power factor, harmonics. Electrical power systems studied include: transmission lines, power transformers, autotransformers, three-phase transformers, resonance and power factor correction, building electrical systems, the national power grids. Prerequisites: EE 223; MATH 252 with grade "C" or better.

REE 253 Electromechanical Energy Conversions
(2-3-3)
AC machines, including single phase, split-phase and three-phase (induction and synchronous machines) motors and generators; introduction to power switching devices, speed control and brushless DC motors. DC machines including shunt, series and compound. Control devices and circuits, including ladder diagrams. Prerequisite: EE 223; MATH 252 with grade "C" or better.

REE 316 Digital Logic Laboratory
(0-3-1)
Selected combinational and sequential logic circuits will be simulated using computers and bread boarded. IC characteristics and function investigated in working digital circuits. Measurement of propagation delays, race conditions and power consumption; use of logic analyzers. Written laboratory reports required. Corequisite: REE 315.

REE 331 Fuel Cells
(2-3-3)
Introduction to fuel cell technologies: PEM, PAFC, AFC, SOFC, MCFC and DMFC systems. Fuel cell components and systems; field flow plates, electrolytes, electrode materials, electrode catalysts, on-board reformers. Portable devices, utility-scale power production, transportation systems. Fuel types and fuel storage. Prerequisites: CHE 260 and PHY 222 with grade "C" or better.

REE 339 Senior Project I
(1-3-2)
Selection, definition, and analysis of a problem suitable for a renewable energy systems senior project prior to actual project development. Includes consideration of project parameters, and implications, proposal of alternate solutions, and justification of selected solution. Culminates in the writing of project proposal. Prerequisite: WRI 327.

REE 344 Nuclear Energy
(3-0-3)

REE 345 Wind Power
(3-0-3)
Introduction to power production from wind resources. Historical uses of wind resources. The dynamics of wind turbines. Large-scale turbine farms and sighting. Commercial development, economics and environmental impacts. (course approval pending) Prerequisites: PHY 222, RES 251.
REE 346 Biofuels and Biomass  
(2-3-3)  
Introduction to power production from biomass resources. Historical uses of biomass resources. Biomass as a solar energy store; forestry and agricultural sources, crop wastes, recycled sources; municipal solid wastes, landfill gas, gaseous fuels; anaerobic digestion, gasification, liquid fuels, fermentation, hydrolysis, transesterification. (corequisite pending)  
Prerequisites: CHE 202, or CHE 222, PHY 222.

REE 347 Hydroelectric Power  
(3-0-3)  
Prerequisites: REE 253.

REE 348 Solar Thermal Energy Systems  
(3-0-3)  
Introduction to solar thermal energy systems for residential, commercial and industrial applications. Solar radiation; topics in heat transfer; flat plate and concentrating collectors; non-imaging optics; applications including water heating, building heating, cooling, industrial process heat, distillation, solar thermal power systems.  
Prerequisites: MECH 323, PHY 223.

REE 411 Photovoltaic Systems  
(3-0-3)  
Grid-connected and stand-alone PV systems. Module and array performance analyzed using Sandia’s IV tracer software. PV system components including batteries, PV modules, charge controllers, maximum power point trackers and inverters will be discussed. Power inverter parameters will be evaluated.  
Prerequisite: EE 343.

REE 412 Electric Power Conversions  
(3-0-3)  
Prerequisites: EE 419, REE 412.

REE 421 Energy Systems Design  
(3-0-3)  
Integration of energy system functions in a typical building including: codes and standards; energy economics; electrical system optimization; waste heat recovery; utility system optimization; HVAC and building system optimization.  
Prerequisites: MECH 323.

REE 439 Energy Systems Management and Auditing  
(3-0-3)  
Analysis of thermal and electrical loading of buildings and industrial processes; evaluation of electrical loading, timing and efficiency of load components. Improving efficiency of thermal and electrical loads, including economic analysis. Application of renewable energy in the analysis of loading and efficiency.  
Prerequisite: REE 421.

REE 449 Senior Project II  
(0-6-2)  
A continuation of REE 439. Prototype construction of project solution begins. Written documentation is produced including design calculations and functional analysis of hardware and/or software needed for project solution. The documentation becomes chapter two of the final senior project report.  
Prerequisite: WRI 327, REE 339.

REE 451 Geothermal Ground-Source and Thermal Heat Pumps  
(3-0-3)  
An introduction to geothermal energy resources. Discussion of heat flow mechanisms. Investigation into heat exchange systems including: binary, flash, double flash, total flow. Application of thermal dynamics in analysis, design and control of heating/cooling systems.  
Prerequisite: MECH 323.

REE 455 Energy-Efficient Building Design  
(3-0-3)  
Prerequisite: REE 421.

REE 459 Senior Project III  
(0-6-2)  
Completion of the project proposed in REE 439 and designed in REE 449. Documentation with specifications, functional description, calculations, test results, schematics, graphs, flowcharts, parts lists, diagrams and photographs become part of the project final report. The student will defend their project before a review panel.  
Prerequisite: REE 449.

REE 465 Renewable Energy Transportation Systems  
(3-0-3)  
Renewable energy transportation systems including fuel cells, hybrid gasoline-electric engines, electric vehicles, bio-diesel, flex-fuel vehicles, high-efficiency diesel engines, gas turbine prime-mover systems. Topics include fuel-air mixing, fuel storage, fuel delivery, cooling, fuel leak detection, chemical safety, and electrical power control systems.  
Prerequisites: MECH 323, REE 251.

(RCP) Respiratory Care Program

RCP 207 Seminar  
(Hours to be arranged each term.)

RCP 221 Introduction to Patient Assessment  
(5-0-5)  
Acquisition and interpretation of the patient history, physical examination, vital signs, laboratory data including arterial blood gases and chest radiograph. Collaborative activities include the acquisition, analysis and communication of findings.  
Prerequisite: Acceptance into Respiratory Care Program or instructor’s consent.
RCP 222 Pulmonary Rehabilitation and Gerontology  
(4-0-4)  
Introduction to the development of and participation in pulmonary rehabilitation teams for the restoration of individual capacity. Behavioral considerations associated with pulmonary disease, age and social support.  
Prerequisite: Acceptance into Respiratory Care Program.

RCP 231 Pulmonary Physiology  
(4-0-4)  
Pulmonary physiology including the mechanics of ventilation, gas diffusion, acid-base regulation, oxygenation, and the physiologic advantage of structure. Gas laws and surface tension as applied to the understanding of clinical problems.  
Prerequisite: Acceptance into Respiratory Care Program or instructor's consent.

RCP 241 Respiratory Gas Therapeutics  
(3-3-4)  
Physical and chemical applications of medical gases and humidity therapy to patient care. The transportation, regulation and dissemination of compressed gases. Clinical decision-making strategies for Oxygen titration.  
Prerequisite: Admission to Respiratory Care Program.

RCP 242 Hyperinflation Therapies  
(2-3-3)  
Study and evidence-based application of PEEP, CPAP, bi-level ventilation, IPPB, and incentive spirometry. Flutter valve, PEP, high frequency chest wall oscillation and other methods of improving bronchial hygiene and lung volume.  
Prerequisite: RCP 241.

RCP 251 Pulmonary Pathology and Pharmacology  
(4-0-4)  
Case-based approach to the understanding, evaluation and treatment of pulmonary disease. Recognition of obstructive and restrictive disease patterns as well as the classification of acid-base and oxygenation disorders. Classification, application and pharmacodynamics of common pulmonary medications are discussed.  
Prerequisite: Admission to Respiratory Care Program.

RCP 252 Cardiopulmonary Pathology and Pharmacology  
(4-0-4)  
A continuation of RCP 251, cardiac disease and pharmacologic interventions. Categories of medications including diuretics, inotropic and chronotropic agents, cardiac stimulants, vasoactive and medications designed to suppress cardiac ectopies.  
Prerequisite: RCP 251.

RCP 261 Clinical I  
(0-0-3)  
Sequential courses designed to provide clinical competence essential to the practice of respiratory care. Competence developed in the area of basic patient assessment, oxygen therapy, aerosol therapy, medical charting and professional communication.  
Prerequisite: BIO 105, RCP 281.

RCP 262 Clinical II  
(0-9-3)  
Sequential courses designed to provide clinical competence essential to the practice of respiratory care. Competence developed in the area of basic patient assessment, ABGs, hyperinflation therapies, medical charting and professional communication.  
Prerequisite: BIO 105, RCP 281.

RCP 275 Cardiopulmonary Diagnosis and Monitoring  
(2-3-3)  
Collaborative investigation, practice, calibration and interpretation of spirometry, body plethysmography, diffusion capacity, helium dilution, seven minute nitrogen washout, cardiopulmonary stress testing, 12 lead ECG acquisition, dysrhythmia recognition, Polysomnographic instrumentation and arterial blood gas instrumentation.  
Prerequisite: RCP 251.

RCP 281 Professional Review  
(3-0-3)  
Systematic problem solving needed to pass the certified respiratory therapist credential. Passage of CRT Self Assessment Examination required for course completion.  
Prerequisites: RCP 242, RCP 252, RCP 261.

RCP 284 Introduction to Mechanical Ventilation  
(3-3-4)  
Collaborative activities and study in the principles of adult volume ventilation, including the indications for the initiation of assisted ventilation, establishing and verifying initial ventilatory parameters, monitoring the ventilated patient and the basics of weaning and discontinuance of ventilatory support.  
Prerequisites: RCP 242.

RCP 304 Field Studies  
(5-0-5)  
Study, investigation and application of various physiologic and respiratory care technologies in a variety of settings. Applied cardiopulmonary sciences in each field. Special topics.  
Prerequisite: RCP 281.

RCP 307 Seminar  
(Hours to be arranged each term.)

RCP 361 Clinical III  
(0-18-6)  
Sequential courses designed for the development of clinical competence. Initial practice and observation in neonatal and pediatric cardiopulmonary care and adult mechanical ventilation.  
Prerequisite: RCP 304.

RCP 362 Clinical IV  
(0-21-7)  
Sequential courses designed for the development of clinical competence. Practice and observation of cardiovascular hemodynamics. Emerging competence in adult and pediatric intensive care.  
Prerequisite: RCP 361.

RCP 363 ICU Clinical  
(0-36-12)  
Sequential courses designed for the development of clinical competence. Management of airway care, pharmacology and mechanical ventilation in adult, pediatric and neonatal intensive care units. Demonstration of summative competence.  
Prerequisite: RCP 362.

RCP 371 Case Conference/Simulation I  
(3-0-3)  
Case conference designed to facilitate critical thinking. Problem oriented learning models investigate decision making in clinical simulations of adult, neonatal and pediatric mechanical ventilation.  
Prerequisite: RCP 304.

RCP 372 Case Conference/Simulation II  
(4-0-4)  
Students prepare and present case studies and deliberate regarding medical decision making in cardiovascular and neuromuscular clinical simulations.  
Prerequisite: RCP 371.

RCP 373 Case Conference/Simulation III  
(5-0-5)  
Capstone course. Students present a case to physicians and the public. Includes posting of work to a public Web site. Resume preparation and participation in employment interview. Clinical simulations, Passage required of Clinical Simulation, RRT Written and the final examination.  
Prerequisites: RCP 386, RCP 362, RCP 372.
RCP 385 Advanced Mechanical Ventilation
(3-3-4)
Description and analysis of the adult patient-mechanical ventilator system including the initiation, assessment, management and discontinuance. Prerequisite: RCP 304.

RCP 386 Critical Care
(5-0-5)

RCP 388 Neonatal and Pediatric Respiratory Care
(3-3-4)
Survey of perinatal physiology with an emphasis on mechanical ventilation, the application of oxygen, medications, positive pressure, resuscitative efforts and evaluations as applied to the neonatal and pediatric patients. Instruction in neonatal resuscitation meets the standards established by the National Academy of Pediatrics. Prerequisite: RCP 281.

RCP 407 Seminar
(Hours to be arranged each term.)

RCP 461 Individual Development Plan
(4-0-4)
Collaboration, negotiation and prioritization required for program planning. Systematic planning required for the development and documentation of four professional competencies. Data collection and analysis for system improvement. Evidence-based clinical leadership. Cooperative learning and technology. Prerequisites: State licensure, current respiratory care employment and the National Board for Respiratory Care Registered Respiratory Therapist (RRT) credential.

RCP 472 Senior Clinical
(0-9-3)
Clinical practice beyond that of an advanced graduate as described in the OIT approved IDP. Areas for development of advanced clinical practice include the intensive care units, pulmonary rehabilitation, research, home care, education and management. Course completion requires fulfillment of IDP. Prerequisite: RCP 461.

RCP 473 Clinical Education
(0-9-3)
Reflective and experiential study and collaborative investigation of the art of education in the clinical environment. Critically responsive teaching and other models are discussed and practiced by licensed, Registered Respiratory Therapists. Participants provide clinical education through their employment.

RCP 482 Clinical Leadership
(0-6-2)
Systematic reflective study of leadership theory applied in the clinician’s own work environment. Leadership tools and theory applied to improvement of healthcare delivery and education. Prerequisite: RCP 461.

RCP 483 Clinical Leadership Technologies
(0-6-2)
Reflection and practice in the application of technology. Licensed Registered Respiratory Therapists develop and use technology to improve instruction. Prerequisite: RCP 461.

(RDSC) Radiologic Science

RDSC 105 Radiation Protection and Radiographic Quality Control
(3-0-3)
Principles of radiation protection and radiographic quality control for veterinary x-ray operators in accordance with Oregon Administrative Rules. Students majoring in Radiologic Science are not eligible.

RDSC 201 Imaging Techniques I
(3-3-4)
Demonstration and practice with the phenomena and causes of image formation and visualization. The context includes studies of effects of technique-factor changes, effects of the use of various accessories and effects of chemicals in film processing. Causes of radiographic artifacts are discussed and explored. Includes the study of interactions of radiation and matter. Prerequisite: MIT 103 with grade “C” or better.

RDSC 202 Imaging Techniques II
(3-3-4)
Radiographic principles and principles of radiographic quality. Study of theory and practice in methods of protection against ionizing radiation. Prerequisite: RDSC 201 with grade “C” or better. Corequisites: RDSC 210, RDSC 272.

RDSC 205 Patient Care
(2-3-3)
Basic concepts of patient care, including consideration of physical and psychological needs of the patient and family. Routine and emergency patient care procedures. Infection control procedures utilizing Universal Precautions. Role of the radiographer in patient education. Prerequisite: RCP 281.

RDSC 207 Seminar
(Hours to be arranged each term.)

RDSC 210 Radiographic Positioning I
(3-3-4)
Demonstration and practice of the routine and special radiographic positions of the upper and lower extremities excluding the shoulder and pelvic girdles. Prerequisite: RDSC 201 and RDSC 235 with grade “C” or better. Corequisites: RDSC 202 and RDSC 272.

RDSC 211 Radiographic Positioning II
(3-3-4)
Demonstration and practice of routine and special radiographic positions of the axial skeleton, shoulder, and pelvic girdles. Prerequisites: RDSC 202, RDSC 210, and RDSC 235 with grade “C” or better. Corequisite: RDSC 233.

RDSC 233 Contrast Media Procedures
(3-3-4)
Routine radiographic examinations of the urinary system, gastrointestinal biliary system, respiratory system, and nervous system, using various contrast media and filming techniques. All radiographically significant anatomy, physiology, pathology, terminology, and topography, including all contrast studies of these systems. Prerequisites: RDSC 202, RDSC 210, RDSC 235, and RDSC 272 with grade “C” or better. Corequisite: RDSC 211.

RDSC 235 Equipment Operation and Maintenance
(3-0-3)
Basic components and operation of radiographic, fluoroscopic, and mobile units. Evaluation, calibration, and maintenance of radiographic equipment and accessories. Corequisite: RDSC 201.
RDSC 272 Radiation Protection  
(3-0-3)

RDSC 301 Radiographic Positioning III  
(3-3-4)
Demonstration and practice of routine and special radiographic positions of the skull, facial bones, and paranasal sinuses. Prerequisites: RDSC 211 and RDSC 233 with grade "C" or better. Corequisites: RDSC 320, RDSC 331.

RDSC 307 Seminar  
(Hours to be arranged each term.)

RDSC 320 Surgical, Trauma and Mobile Radiography  
(3-3-4)
Routine radiographic examinations of the reproductive, muscular, nervous, skeletal and circulatory systems. Also including emergency and surgical procedures, using various contrast media and filming techniques. The comprehensive study of all radiographically significant anatomy, physiology, pathology, terminology, and topography including all contrast studies of these systems. Control of microorganisms by physical and chemical means is incorporated as necessary. Corequisite: RDSC 301.

RDSC 326 Cardiovascular/Interventional Technology  
(3-3-4)
Demonstration and practice of special radiographic examinations of nervous and vascular systems including use of serial film changers and pressure injectors, and other necessary equipment. Also includes related nursing procedures. Prerequisites: RDSC 211, RDSC 233, and RDSC 320 with grade "C" or better.

RDSC 331 Nuclear Medicine  
(3-0-3)
Principles of radioactivity, radiometric analysis, methods of detection, uses of radionuclide techniques in biological problems. Special emphasis is given to modern imaging systems and procedures used currently in clinical nuclear medicine.

RDSC 350 Bones: The Interactive Anatomy and Position Course  
(2-0-2)
A sequential review of osteology and positioning designed for the medical imaging student who has completed the positioning sequence, or the graduate seeking continuing education credit. Prerequisites: RDSC 210, RDSC 211, RDSC 301, or Registered Radiologic Technologist.

RDSC 354 Mammography  
(3-3-4)
An in-depth analysis of mammographic positioning, exposure techniques, quality control, film critique, and radiation safety. Includes current registry exam. Prerequisite: RDSC 301.

RDSC 355 Computed Tomography  
(3-3-4)
X-ray physics, scanner components, and data acquisition of computed tomography. Image reconstruction, manipulation, and artifacts. CT patient care and imaging procedures of the head, neck, spine, chest, abdomen, pelvis, and musculoskeletal system. Laboratory simulation is included. Prerequisite: BIO 335.

RDSC 356 Magnetic Resonance  
(3-3-4)
Physics and principles used in the production of magnetic resonance images and spectroscopy. Static magnetic fields, gradient magnetic fields, secondary coil fields, nuclear magnetic resonance (NMR), spatial domain, frequency domain, computer data acquisition, relaxation times, pulse sequence diagrams. Laboratory simulation is included. Prerequisites: BIO 335 and PHY 201 or PHY 217 all with grade "C" or better.

RDSC 365 Advanced Quality Assurance/Quality Control  
(3-3-4)
Principles of diagnostic radiographic quality assurance systems including: quality control testing, equipment calibration, preventive maintenance, and government regulations. Laboratory experiments involve QC tests and measurements. Prerequisites: RDSC 202, RDSC 272.

RDSC 366 Radiographic Pathology  
(3-0-3)
An overview of common pathological conditions encountered in the clinical setting, for RDSC students. Pathology is categorized by body systems. The students will learn the pathology as they relate to: signs and symptoms, etiology, imaging diagnosis and prognosis and treatment. Prerequisite: BIO 336.

RDSC 371 Medical Ultrasound  
(3-0-3)
Ultrasonic physics, instrumentation and their effect upon imaging, quality assurance and bioeffects are presented and discussed. Pre- or corequisite: BIO 335 with grade "C" or better.

RDSC 388 Externship Preparation  
(2-0-2)
Presentation of key concepts related to Radiologic Science externship and required in-services. Focus is on patient care and interpersonal scenarios the externship student will likely face while in the clinical environment. Review and discussion of the RDSC Externship Handbook. This course is a mandatory course that must be completed prior to externship. Prerequisites: RDSC 326, RDSC 371 with grade "C" or better. Corequisites: RDSC 355; RDSC 356; RDSC 354 or RDSC 365.

RDSC 407 Seminar  
(Hours to be arranged each term.)

RDSC 410 Radiologic Science Externship  
(0-40-15)
Students must complete four terms (12 months) of clinical experience in both general radiography and special imaging modalities, to include computed tomography, magnetic resonance imaging, ultrasound, nuclear medicine and/or cardiovascular interventional technology at an affiliated clinical site. Students will complete all phases of general radiography and a maximum of 12 weeks in the special imaging modalities. Students under the direct supervision of qualified radiographers and radiologists. Prerequisites: All academic coursework in the Radiologic Science curriculum.

RDSC 411 Special Radiologic Science Externship  
(0-40-15)
This one-term (three-month) practicum is designed to develop the skills of the student in the special imaging modalities, i.e., computed tomography, magnetic resonance imaging, ultrasound, nuclear medicine and special radiographic procedures. The student is sent to an affiliated hospital that has the required special imaging equipment to give the hands-on experience to develop competency in each of three areas chosen by the student. The student will spend one month in each selected area. Prerequisites: The student must have completed all academic coursework in the Medical Imaging program with grade "C" or better and be a Registered Technologist.
RDSC 411A, RDSC 411B Special Radiologic Science Externship

(411 A, 0-18-7)(411B, 0-22-8)
This two-term practicum is designed to develop skills of the degree completion student in special imaging modalities of computed tomography, magnetic resonance imaging, cardiovascular/interventional technology, mammography, quality assurance, nuclear medicine technology, or sonography. The student selects a local hospital or medical center that has the necessary equipment. Upon approval of the facility, the student begins a supervised experience to develop competencies in each of three chosen areas.
Prerequisites: Be an ARRT registered technologist in good standing, and have completed all the academic coursework in the Medical Imaging curriculum with grade “C” or better.

RDSC 471 Clinical Imaging Education I
(1-0-1)
Development and application of clinical education objectives relating to medical imaging technology. Instruments used to evaluate student performance and competence.
Prerequisite: RT(R) (ARRT)

(SOC) Sociology

SOC 204 Introduction to Sociology
(3-0-3)
Survey of human relationships and interaction of organized groups and institutions in modern society. Emphasis on attitudes, values, beliefs, customs and change within our complex social structure.

SOC 207 Seminar
(Hours to be arranged each term.)

SOC 210 Marriage and Family Living
(3-0-3)
Personal problems of the married couple in everyday living with an emphasis on adult lifestyles, relationships, sexual roles and attitudes, family planning, family finances, and divorce and remarriage.

SOC 304 Criminology
(3-0-3)
Analysis of criminal behavior from theft to homicide. Discussion of the definition of criminal behavior, varieties of crime and the criminal justice system.
Prerequisite: SOC 204.

SOC 407 Seminar
(Hours to be arranged each term.)

(SPAN) Spanish

SPAN 101, 102, 103 First Year Spanish
(4-0-4)
An introduction to elementary Spanish. A three-term sequence for beginners. Emphasis on vocabulary building, listening comprehension, phonetics, oral practice, and elements of grammar. Elementary readings and writings will be required.
Prerequisite: Taken in sequence or instructor consent.

SPAN 201, 202, 203 Second Year Spanish
(4-0-4)
Intensive introduction to the language. Course aims at progressive development of fluency through extensive exposure to the language in real situations. Comprehension-based approach.
Prerequisite: SPAN 103 or instructor consent.
SPAN 201, SPAN 202, SPAN 203 taken in sequence or instructor consent.

SPAN 207 Seminar
(Hours to be arranged each term.)

SPAN 407 Seminar
(Hours to be arranged each term.)

(VAS) Vascular Technology

VAS 207 Seminar
(Hours to be arranged each term.)

VAS 210 Vascular Physical Principles and Instrumentation I
(3-3-4)
Properties of sound waves, propagation and interaction of ultrasound in tissue, basic ultrasound instrumentation, static, and real time ultrasound imaging principles and artifacts are covered. Laboratory includes demonstration of wave characteristics and introduction to basic instrumentation of real-time ultrasound imaging.
Prerequisite: PHY 217 with grade “C” or better.

VAS 211 Vascular Physical Principles and Instrumentation II
(3-3-4)
Advanced physical principles. Hemodynamics, Doppler physics, color imaging, and artifacts associated with them are covered. Digital signal and image processing and bioeffects are also discussed. Laboratory develops instrumentation skills.
Prerequisite: VAS 210 with grade “C” or better.

VAS 214 Vascular Anatomy
(3-3-4)
Detailed consideration of the gross and microscopic anatomy of arteries and veins throughout the human body. Laboratory includes cadaver dissection, anatomical models, and an introduction to instrumentation and basic ultrasound scanning techniques.
Prerequisites: MIT 103 with grade “C” or better. Corequisite: BIO 220 and PHY 217.

VAS 225 Patient Management Practices
(2-3-3)
Current issues in the practice of vascular technology with emphasis on basic concepts of patient care, infection control procedures, and the technologist’s responsibility to the patient, the patient’s family, and the vascular technology profession.
Prerequisites: BIO 347, VAS 210, VAS 245, VAS 335. Corequisites: VAS 211, VAS 246.
**VAS 245 Peripheral Venous Disease**  
(3-3-4)  
Investigation of the pathophysiology of venous disease with emphasis on theoretical and practical considerations of diagnostic methods of venous testing. These include clinical assessment, plethysmography, and duplex imaging of lower and upper extremity veins.  
Prerequisites: BIO 220, BIO 346, PHY 217, VAS 214.  
Corequisites: BIO 347, VAS 210, VAS 335.

**VAS 246 Peripheral Arterial Disease**  
(3-3-4)  
Investigation of the pathophysiology of arterial occlusive disease with emphasis on the theoretical and practical considerations of diagnostic methods of arterial testing. These include clinical assessment, physiological evaluation, and duplex imaging of lower and upper extremity arteries.  
Prerequisites: BIO 347, VAS 210, VAS 245, VAS 335.  
Corequisites: VAS 211, VAS 225.

**VAS 335 Radiographic Vascular Anatomy**  
(3-0-3)  
Survey of medical imaging modalities ancillary to vascular sonography including angiography, digital subtraction angiography, computerized tomography and magnetic resonance angiography. Student teams will prepare case studies comparing the efficacy of these imaging modalities.  
Prerequisite: BIO 220, BIO 346, PHY 217, VAS 214.  
Corequisites: BIO 347, VAS 210, VAS 245.

**VAS 337 Survey of Echocardiography**  
(3-0-3)  
A survey of basic echocardiography with emphasis on normal cardiac anatomy and abnormal disease states. Standard sonographic imaging techniques of adult echocardiography, including instrumentation and protocols.  
Prerequisites: BIO 220, BIO 246.

**VAS 365 Abdominal Vascular Disease**  
(3-3-4)  
Diagnostic methods of abdominal and visceral vascular disease testing. Includes aorto-iliac, renal artery and kidney, mesenteric system, liver system, and transplantations. Laboratory emphasizes advanced instrumentation and scanning techniques, patient interviews, clinical signs and symptoms, physical assessment and findings.  
Prerequisites: VAS 211, VAS 225, VAS 246. /cireqyusute: VAS 337.

**VAS 366 Special Circulatory Problems**  
(3-3-4)  
Diagnostic methods of testing the efficacy of vascular surgical procedures (including arterial bypass grafts, interventional radiographic procedures, organ transplants, and dialysis access grafts, Vein and arterial mapping prior to bypass surgery including IMA evaluation, intravascular ultrasound, pseudoaneurysm compression, and compartment syndrome.  
Prerequisites: VAS 337, VAS 365.  
Corequisites: CHEM 210, VAS 375.

**VAS 367 Cerebrovascular Disease**  
(3-3-4)  
Theoretical and practical considerations of diagnostic methods of testing arterial and venous diseases affecting the vasculature of the head and neck including the intracerebral vessels. Laboratory includes advanced instrumentation and scanning techniques, and instruction on patient interviewing, clinical signs and symptoms, physical assessment and findings.  
Prerequisites: CHEM 210, VAS 366, VAS 375.  
Corequisites: VAS 385, VAS 388.

**VAS 375 Survey of Abdominal Sonography**  
(3-0-3)  
A survey of basic abdominal sonography with emphasis on normal abdominal anatomy and abnormal disease states. Standard sonographic imaging techniques of general abdomen, instrumentation, and abdominal protocols.  
Prerequisites: VAS 265, VAS 337.  
Corequisites: CHEM 210, VAS 366.

**VAS 385 Vascular Laboratory Management**  
(3-0-3)  
Focus on human resource skills as necessary to manage a vascular laboratory. Includes the interview process, hiring and firing, as well as employee performance evaluation. Other topics will include reimbursement, licensure, accreditation and other management issues.  
Corequisites: VAS 367, VAS 388.

**VAS 388 Externship Preparation**  
(2-0-2)  
Review and summarization of key concepts in Vascular Technology. Focus is on patient care and interpersonal scenarios the externship student will likely face while in the hospital environment or independent vascular lab. Review and discussion of the Vascular Technology Externship Handbook.  
Prerequisites: VAS 366, VAS 375 with grade “C” or better.  
Corequisites: VAS 367, VAS 385.

**VAS 407 Seminar**  
(Hours to be arranged each term.)  

**VAS 420 Vascular Technology Externship**  
(0-40-15)  
All B.S. students complete four terms (12 months) of clinical experience in Vascular Technology at an affiliated clinical site. Students work under the direct supervision of Registered Vascular Technologists and provide monthly log sheets and evaluation forms. Students prepare clinical case studies each term.  
Prerequisites: All academic coursework in the Vascular Technology curriculum.

**VAS 420A, 420B Special Vascular Technology Externship**  
(420A, 0-22-8)(420B, 0-18-7)  
This two-term special externship is designed for the degree completion student. Students working in a clinical vascular setting will prepare clinical case studies as well as rotate through special imaging modalities.  
Prerequisites: Be an ARDMS or CCI Registered Vascular Technologist in good standing, and have completed academic coursework in the Medical Imaging curriculum with grade “C” or better.

**(WRI) Writing**

**WRI 115 Introduction to Writing**  
(3-0-3)  
Focuses on sentence structure, paragraph coherence, and essays. Regular writing and feedback develop student competency in college level writing. May not be used to meet general education requirement or graduation credit.  
Prerequisites: Writing ability as demonstrated by SAT/ACT score and/or writing sample.

**WRI 121 English Composition**  
(3-0-3)  
Focuses on narrative/descriptive and expository writing. Students write essays, edit their own and others’ work, develop competence in drafting, composing, organizing, and revising a variety of types of essays.  
Prerequisite: Writing ability as demonstrated by SAT/ACT score and/or writing sample.

**WRI 122 English Composition**  
(3-0-3)  
Designed to develop skills in ethical argument, research, and critical thinking. Multi-page papers, including an argumentative research paper, required. Students draft, compose, organize, and revise with focus on audience, effective style, and overall rhetorical effect.  
Prerequisite: WRI 121 with grade “C” or better.
WRI 123 English Composition  
(3-0-3)  
The formal research paper. Designed primarily for students in the college transfer program but may be taken as an elective by students in any curriculum.  
Prerequisite: WRI 122.  
Pre- or corequisite: SPE 111.

WRI 207 Seminar  
(Hours to be arranged each term.)

WRI 214 Business Correspondence  
(3-0-3)  
Theories and strategies governing written correspondence. Designed to equip the student to perform effectively in a variety of business writing situations. Major emphasis on practical applications.  
Prerequisites: WRI 122 or equivalent, and keyboarding ability.

WRI 227 Technical Report Writing  
(F,W,S)(3-0-3)  
Practice in techniques of gathering, organizing, and presenting technical information. Technical reports derived from realistic situations found in the student’s major will be written.  
Prerequisite: WRI 122.  
Pre- or corequisite: SPE 111.

WRI 305 Writing for the Marketplace  
(As required)(3-0-3)  
Designed to introduce the basics of professional writing—fiction, personal experience, and technical articles, etc. for publication, including marketing and manuscript preparation. Each student must submit at least one article or story (8 pages or more) for publication during the term.

WRI 321, WRI 322, WRI 323 Advanced Technical Communication  
(S,F,W)(1-0-1)  
Processes involved in technical communication; presents suggestions for solutions to the variety of problems emanating from junior project situations. This sequence is to be taken in consecutive terms (S,F,W) and is offered for the convenience of students whose junior or senior projects require a full year for completion. The three-term sequence substitutes for WRI 327.  
Prerequisite: WRI 227.  
Corequisite: Senior project.

WRI 326 Technical Communication for Health Care Professionals  
(3-0-3)  
Advanced experience and practice in technical communication with emphasis on documentation related to the health care profession. A distance education course offered to students pursuing health-related degree completion programs.  
Prerequisite: Introductory technical writing course or equivalent.

WRI 327 Advanced Technical Writing  
(F,W,S)(3-0-3)  
Processes involved in technical writing and methods of preparing technical data; offers a variety of writing problems to provide opportunities for the student to develop precision in statement and in graphic presentation.  
Prerequisite: WRI 227.

WRI 328 Technical Journalism  
(2-3-3)  
Production of a weekly newspaper (The Edge). Includes journalistic writing, design, layout, and production, as well as proposals, memos, business correspondence, and recommendation reports. May substitute for WRI 327 with approval of student’s major department.  
Prerequisites: WRI 227 and consent of instructor and adviser.

WRI 350 Documentation Development  
(3-0-3)  
Provides students with basic tools for preparing documentation. Course focuses on usability of the documentation and covers planning and scheduling, audience evaluation, use of appropriate examples and illustrations, style, editing technique, organization and research.  
Prerequisite: WRI 227.

WRI 407 Seminar  
(Hours to be arranged each term.)

WRI 410 Proposal and Grant Writing  
(3-0-3)  
Provides theory and skills in proposal writing for seeking funding from public and private agencies and for preparing proposals in business and industrial settings. Focuses on the process of preparing proposals, including analyzing audiences, conducting research, organizing, writing, and editing.  
Prerequisite: WRI 227.

WRI 415 Technical Editing  
(3-0-3)  
Focuses on the role of the technical editor in business and industry. Examines the publishing process, the dynamics of the editor/writer relationship, and mechanics and techniques of proofreading and copyediting. Provides considerable practice in copyediting and proofreading manuscripts.  
Prerequisite: WRI 227 or appropriate work experience.

WRI 420 Document Design  
(2-3-3)  
Applies publishing and graphic arts principles to the preparation of professional publications and oral presentation materials. Includes typography, design principles, the use of graphical elements, and integration of text and graphics.  
Prerequisites: WRI 227, SPE 111, word processing ability.
University Services

Academic Records

Marla Edge, Registrar
Wendy Pederson, Associate Registrar

Snell Hall, lower level
(541) 885-1300
registra@oit.edu
www.oit.edu/registrar

Major functions of the Registrar’s Office are the maintenance of student records, registration, Web services, grade processing, transfer-credit evaluation and community college articulation, degree checking, graduation, scheduling, veterans’ services, enrollment certification and the catalog.

Academic Information
The class schedule, introductory pages to the Class Schedule and General Catalog contain information about academic regulations, registration instructions and college procedures and policies. Students should be familiar with this information. These documents can be found on the OIT Web site at www.oit.edu/registrar.

Student Records
The Registrar's Office maintains information regarding academic progress, including grade reports and permanent academic records (transcripts). Students and alumni may request transcripts at any time.

The Registrar's Office also collects and maintains accurate information about students, such as address, curriculum (major) and adviser's name. Much of this information is required for local and state enrollment reporting and for accurate mailing addresses. Changes to personal data such as address or name should be reported to the office promptly.

Privacy Rights
Under the Family Educational Rights and Privacy Act of 1974, students are entitled to review records, files, documents and other materials that contain information maintained by the university. Students may challenge information considered inaccurate or misleading. A list of university records, the responsible custodians and the university policy on records are available in the Registrar's Office.

Directory Information
The following information is considered Directory Information and may be made available to the public unless you restrict its release by written notice to the Registrar by the last day to register or add courses for the current term.

OIT designates the following items as Directory Information: student name, current address, current telephone number, dates of attendance, classification (year in school), major field of study, most recent previous school attended, degrees and awards received (including dates), hometown, past and present participation in officially recognized activities and sports; and for members of athletic teams: age, height and weight.

Registration
The Registrar's Office publishes the class schedule and registration instructions for each term on the OIT Web site at www.oit.edu/registrar. It also maintains class rosters for instructors and processes grades. Personal information, class schedules and grades, as well as unofficial transcripts, are on OIT’s Web for Student and also available in the office.
Athletics, Recreation and Fitness

Mike Schell, Director

PE, Room 116
(541) 885-1634
michael.schell@oit.edu

The Oregon Tech Athletic Department as well as the Tech Fit Center mission is to facilitate growth and development of students by providing a broad-based athletic program that creates educational opportunities through the medium of competition at the collegiate level as well as the opportunity to benefit personal health and fitness to the campus community through the Tech-Fit facilities and educational classes offered. OIT's Athletics, Recreation and Fitness Education Center has many facilities, fitness and education opportunities. A new expansion off the front of the center will provide students with an expanded cardiovascular workout area. A free-weight room stocked with all the needed equipment is located downstairs on the east side. A six-lane, 25-meter swimming pool is used for swim teams and water polo as well as lap swimming and open recreation. There are six tennis courts (four lighted), an eight-lane, 400- meter, all weather surface track and a lighted basketball court for your outdoor recreation. Also, watch for a lawn volleyball net as it tends to move around campus.

Oregon Tech competitive athletics teams include men's and women's basketball, cross country, soccer and track; women's volleyball, women's softball and men's baseball.

The Tech Fit Center and athletics are financed by revenues generated from the programs' operation as well as from Incidental Fees, Oregon State Lottery funds, State General Appropriations and contributions from the community through the OIT Foundation or Oregon Tech Athletic Association.

Competitive Athletic Teams

The Oregon Tech Athletic department is dedicated to preparing our student-athletes for professional and personal success in the real world by learning the values of integrity and excellence on the court, field and in the classroom. To that end, we are committed to field teams with the talent and ability to compete at the top of the Cascade Collegiate Conference, as well as regionally and nationally in the NAIA while representing Oregon Tech with dignity and class.

The privilege of participation in intercollegiate athletics and dedication to team goals provides a classroom where students may experience the development of skills, sportsmanship, loyalty, self-discipline and responsibility while learning the values of winning, losing and competing. The Oregon Tech athletic program contributes to campus life by providing a focal point for social interaction, leadership development, involvement in peer support groups and entertainment.

Intramural Sports

The Oregon Institute of Technology intramural program offers a variety of individual and team events in three divisions: men, women and co-ed. We hope that our program and its diversity will invite each of you to participate in at least one event during the academic year. Call 885-1390 for information about intramural sports programs or see the Web site for rosters and information.

Tech Fit

The Tech Fit Center is free to all OIT students enrolled in eight or more credits per term. Students taking less than eight credits or community members may sign up in either credit or non-credit classes for a minimal charge. For more information call 885-1634.

Bookstore, The Paper Owl

Lane Hickman, Director

College Union
(541) 885-1050
paperowl@oit.edu

The Paper Owl is a full-service campus store owned and operated by OIT. The operational philosophy allows prices on course books to average considerably less than those found at most university bookstores. Besides course books, the Paper Owl carries a wide variety of contemporary items that students prefer: school, office and dorm supplies, scientific and business calculators, writing instruments, drafting supplies, emblematic clothing and gifts, computer supplies, electronic parts and useful reference books, among others.

The Paper Owl services include its popular book reservation program. Students submit a reservation form and bookstore staff reserve requested titles. Students may pay for the books at the time of pick up, or prepayment may be arranged with the Student Charge Plan, eliminating the need to stand in a long line.

The Paper Owl has a high percentage of used books in stock. The book buy-back program, also very popular, allows students to sell back many books they do not want to keep after taking a course. Other services include gift wrapping and special pricing programs on computer software, electronic parts and calculators. Friendly service is the hallmark of The Paper Owl. Students can order or reserve their course books and shoppers can order merchandise on the bookstore's Web site at www.bookstore.oit.edu.
Affirmative Action and Equal Opportunity

Ron McCutcheon, Affirmative Action Officer

Snell Hall, Room 108
(541) 885-1108

The Affirmative Action Officer is charged with oversight and enforcement of OIT’s compliance with relevant federal, state and university civil rights statutes and regulations. Complaints and grievances related to unlawful discrimination and harassment under Title IX, the Civil Rights Act, the Rehabilitation Act, the Americans With Disabilities Act and employment law are to be directed to the Officer for resolution. The Officer also coordinates OIT’s Equal Opportunity programs and activities which seek to maintain a learning and working environment that fosters diversity, equality and personal success.

Inquiries, requests for assistance, or grievances pertaining to OIT policies on discrimination, harassment, equal opportunity or access to programs and services should be directed to this office, located in the Human Resources Office in Snell Hall.

Assessment

Beth Murphy, Director

Semion Hall 223
(541) 885-1141
beth.murphy@oit.edu

OIT actively engages in assessment of both degree programs and broad institutional student learning outcomes (ISLOs). The director of Assessment, in conjunction with the Executive Committee of the Assessment Commission, leads the campus in these efforts.

Assessment coordinators for each undergraduate and graduate degree program create an assessment plan focusing on program learning outcomes created by each academic department. The faculty for the program identify strengths and weaknesses in student learning and recommend plans for improvement through a continuous program improvement process. Information on assessment of student learning outcomes is posted on the OIT Web site at www.oit.edu/provost/learningoutcomes.

OIT faculty also assess the ISLOs, which are intended to reflect common themes from departmental and program learning outcome statements. These outcomes are consistent with OIT’s mission and objectives. Specifically, the ISLOs reflect institutional Objective 2, which states that an education from OIT will enable students to be effective communicators, responsible citizens and lifelong learners by assisting them in the development of critical thinking, problem solving skills and ethical and cultural awareness. Additional information on OIT’s ISLOs can be found in the Academic Policies section of the catalog.

Career Services

David M. Westhart, Director
Jan Goodyear, Recruitment Manager

Learning Resources Center, 216
(541) 885-1020
career@oit.edu

The Career Services Office supports student and alumni efforts to develop and achieve career goals. Services include: individual career advising; workshops and classroom presentations on résumé-writing, job interviewing, job search and applying to graduate school; on-campus employer recruitment, whereby companies and government agencies interview students for career and internship opportunities; Career Fairs, which bring employers and students together on campus to discuss career opportunities informally; career-resource materials and job listings; and a résumé referral service, which supports student applications for employment and graduate school.

Career Services also coordinates the Student Employment Service, which provides part-time employment for students both on and off campus with local employers. Positions are available through the College Work-Study program or through regular employment.

Career Services

Christopher Dalla, Director
James Dernbach, Dining Manager

College Union
(541) 885-1065
chris.dalla@oit.edu

Campus Dining offers the entire campus community a wide variety of food choices for take-out or to eat-in in a great, new facility. The Tech Express declining-balance program is available to commuters, faculty and staff. The Tech Express is convenient, offers bonus dollars on deposits to help stretch individual budgets and can be charged to students’ individual accounts. Other options are available at the Bistro espresso shop in the College Union or Duffie’s espresso cart in Purvine Hall; there is also a Subway sandwich shop in the College Union. Campus Dining offers soups, salads, sandwiches, burgers and many other options throughout the day. To help students with college expenses, the Campus Dining operation employs more than 80 student workers.
College Union

Christopher Dalla, Director
Trevor Oswald, Manager
Information Desk, CU 116
(541) 885-1030
www.oit.edu/collegeunion

The College Union is the center of student activity on campus. Located within the Union are the student government offices, Campus Arts and Entertainment, the Diversity Center, student services staff, campus dining operations, the student newspaper, the bookstore, the campus mail center, the Outdoor Program, the Women’s Resource Center and the main campus auditorium. In addition, there are comfortable study and lounge areas and meeting rooms for both student and community use. Coffee house functions, lectures, special classes, concerts and dinner theaters, art shows, dances and movies are among the typical events scheduled in this facility.

For information about using space in the College Union or to make a reservation, contact the CU Information Desk located on the lower level, south of the main entrance.

Disability Services

Joan Loustale, Director
Learning Resources Center, 210
(541) 885-1031 or (541) 851-5225
(541) 885-1072 Text Telephone

The Office of Disability Services coordinates academic, housing and program services accommodations for students with documented physical, learning, sensory, psychiatric and other disabilities. Students with disabilities who anticipate needing services on campus should contact this office well in advance of attendance at OIT to arrange for timely services.

Document Resource Center

Heather Reynolds, Supervisor
College Union
541-885-1059

Operated by Ikon Financial Systems, the DRC is a one-stop shop for graphic design, printing and bulk mailing needs. Services are available to faculty, staff, students and the OIT community.

Black and white, color, digital printing as well as laminating, comb binding and shredding are available at low costs. Electronic job submission provides the campus with access to services and completed jobs can be delivered to campus mail boxes within 24 hours.

Mail services include bulk mailing; mail merge; folding and inserting; and postcard mailings. Special requests will be addressed on an individual basis.

Hours of operation are 7 a.m. to 6 p.m. Monday through Friday during the academic terms. During college breaks, operational hours are 7 a.m. to 5 p.m.

Geo-Heat Center

John W. Lund, Director
Tonya L. Boyd, Engineer
Gene Culver, Mechanical Engineer
Debi Carr, Office Manager
Boivin Hall, 102
(541) 885-1750
goeheat@oit.edu

The Geo-Heat Center, established in 1975, is active in research, technical assistance and information services in geothermal direct-use, small-scale power generation and ground-source heat pumps. Research activities have included hydrology and geochemistry studies, district heating, downhole heat exchangers, heat pumps, agri-business applications, low-temperature Rankine cycle generators and resource assessment.

The Center provides technical assistance for geothermal projects in the area of equipment and materials selection, feasibility studies, design, troubleshooting and economic evaluations. This program is sponsored by the U.S. Department of Energy and provides training sessions and information dissemination about the direct applications of geothermal energy, small-scale power generation and ground-source heat pumps.

The Center publishes the Quarterly Bulletin, technical papers, software and monographs on geothermal energy. The staff has made presentations worldwide and gives tours of local geothermal installations. They are active in professional organizations such as the Geothermal Resources Council, American Society of Heating, Refrigeration and Air-Conditioning Engineers, International

Information Technology Services

Andy Abbott, Chief Information Officer
Boivin Hall, 123
(541) 885-1720
(541) 885-1470 Help/Service Desk

Information Technology Services provides computing and telecommunications resources for the OIT campus. Primary service and support areas include e-mail and network storage for all students, faculty and staff; broadband network connectivity between all OIT buildings; and advanced technology services such as wired and wireless Internet connections, Internet 2 and interactive videoconferencing. In conjunction with OIT faculty, staff and students, ITS strives to offer the comprehensive and advanced technologies necessary to meet educational needs and to help facilitate instruction and research on the OIT campus.

OIT offers more than 500 computers available for student use in 49 computer labs on the Klamath Falls campus. The Portland Metro and West campuses have more than 100 computers for student use in 10 computer labs. ITS supports the computers in campus laboratories and classrooms to insure proper function and availability for faculty and students.

Klamath Community Television

Josh Rindfleisch, Senior Field Producer
Learning Resource Center, 250
(541) 885-1801

The community television station is housed on the second floor of the Learning Resource Center. Funded by cable television franchise fees from Klamath County and the City of Klamath Falls, Klamath Community Television’s mission is to educate, inform and entertain. The station produces and cablecasts public, educational and governmental programs primarily for the residents of Klamath County, but for wider distribution as well.

Klamath Community Television strives to create local programming to promote Klamath County and the City of Klamath Falls. Some of this local programming has included: Reflections on a Dream: People of the Klamath Watershed, The Diary of a Dairy, The Endangered Species Hearings of 2004, The Internment Camps of Tule Lake, Best Science for the Klamath Basin, city and county police department studio shows, Keno fire safety videos and Archaeology on the Williamson River Delta just to name a few. In addition, the station also televises local city council, city planning and county commissioner meetings. In 2005, KCTV was awarded the Telly Award for its production of Mother Goose and Friends. The Telly Awards honor local, regional and cable television programming.

Library Services

Karen Kunz, Interim Library Director
Anne Hiller Clark, Instructional Services and Shaw Librarian
Dawn Lowe-Wincentsen, Portland Operations Librarian
Karen Kunz, Access Services and Systems Librarian
Kelly Peterson, Instructional Services Coordinator and Digital Projects Librarian
Alla Powers, Reference Services Coordinator
Iris Godwin, Technical Services Librarian

Library

The Library, located on the ground floor of the LRC, provides collections and services developed to support the educational goals of the university. The Library contains approximately 150,000 volumes, including government documents; access to more than 18,000 print and electronic journals; and unique digital collections relating to the Klamath River Watershed. An online catalog provides access to OIT Library collections and to Summit, a unified catalog of Oregon and Washington academic libraries. The Library’s many Web-based databases offer students access to extensive information sources. All of the Library’s electronic resources are available campus-wide and via remote access to promote student learning regardless of location. Research services include print and electronic reserves, interlibrary loans and individual research assistance. The librarians offer class-related instruction in the use of the Library and information resources, workshops on various topics, classes in research methods and tours. For librarian assistance, call (541) 885-1773.

OIT Portland

Library services are also available at the OIT Portland campuses, which share access to all of the Main Library’s electronic resources. To reach the Portland Operations Librarian, call (503) 725-2135 or (503) 725-5933.
Shaw Historical Library
The Shaw Historical Library, established in 1983 by Laurence and Dorothy Shaw, houses collections of books, art, maps, manuscripts, photographic images and other materials pertaining to the history and cultures of the Land of the Lakes, Southern Oregon, Northern California and Northwestern Nevada, from prehistory to the present. The Library’s activities and publications, including the Journal of the Shaw Historical Library, focus on all aspects of the history of the region. The Library is located on the second floor of the LRC. To reach the Shaw Librarian, call (541) 885-1686.

OIT Mail Center
College Union
541-885-1670
As a commercial mail outlet, the OIT Mail Center serves the campus community by offering mailing services and supplies. Mail Center hours are 10 a.m. to 4:30 p.m. Monday through Friday and 10 to 11:30 a.m. Saturdays. The Mail Center is not open on Saturdays during college breaks. The Mail Center is located inside the Paper Owl Bookstore.

Media Services Center
Sharon Hanson, Coordinator
Learning Resources Center, 237
(541) 885-1785
sharon.hanson@oit.edu
The Media Services Center provides technical and material support for faculty, students and administrators by providing audio/visual and computer/projection equipment to classrooms, videotaping speech classes, classroom guest speakers and NAIA sports events. Services also include audio- and video-tape duplication, repair of AV equipment and training of faculty and students on new and specialized classroom equipment.

Oregon Renewable Energy Center
Tom Chester, Director
Purvine Hall, 270
(541) 885-1883
tom.chester@oit.edu
The Oregon Renewable Energy Center was established by the Oregon State Legislature in 2001 to promote energy conservation and renewable energy use in Oregon and throughout the Northwest. This is accomplished through applied research, educational programs and practical information. The Center also encompasses OIT’s Geo-Heat Center. OREC draws its strong technical expertise from the OIT faculty, whose engineers and computer scientists have been involved in applied research in renewable energy for decades.

OREC:
- Investigates renewable energy technologies and opportunities for using them.
- Assesses which technologies are appropriate for particular circumstances.
- Applies promising technologies with effective instrumentation and controls.
- Evaluates technologies using testing and economic analysis.
- Informs the public through classes, educational materials and technical data.

Current OREC applied research and applications engineering projects focus on:
- Power conversion and storage – Testing renewable technologies such as solar, fuel cells and geothermal heat pumps and developing control systems to smoothly integrate renewable technologies into existing facilities and electrical distribution networks.
- Alternative fuel sources – Investigating options to gasoline and diesel for cars and trucks.
- Green building technologies – Utilizing green building materials and techniques, and instrumentation, control and testing of buildings that use renewable energy instead of conventional power.

Renewable Energy Systems Degree Program
The Renewable Energy Systems undergraduate degree program offered by OIT is the only one of its kind in the United States. In addition to the RES courses, the general OIT curriculum includes classes and laboratories in renewable energy and sustainability that are available to students in other disciplines. The RES degree is delivered on OIT’s Portland and Klamath Falls campuses.

Public Relations
Valeree Lane, Director
Snell Hall
(541) 885-1160
valeree.lane@oit.edu
The Office of Public Relations promotes the university at local, state, regional and national levels through media, community and governmental relations. Public Relations works in conjunction with many departments to ensure key marketing messages are received by internal and external constituents and the general public.

Public Relations prepares official marketing and collateral materials for university use. Key among these are admissions and enrollment marketing literature, the General Catalog, President’s Report and program brochures.

Helping to build unity and recognition through advertising and marketing, the Public Relations Office is involved with developing advertising and marketing using key messages which are strategically placed. Additionally, the Public Relations Office is responsible for creating and maintaining a graphic identity program which defines standards for the use and display of the university’s primary identifiers.
Public Relations produces and transmits tech news DAILY, an electronic newsletter circulated throughout the OIT community of faculty, staff and students.

Small Business Development Center

Jamie Albert, Director and Counselor
Crystal Foster and Deborah Carr, Administrative Support
Boivin Hall, 119
(541) 885-1760
sbdc@oit.edu

Established in 1984, the Small Business Development Center provides free, confidential advice to businesses in Klamath and Lake Counties. Areas of emphasis include start-ups, existing concerns, expansion and operations improvement.

Business counseling is done by the Center’s director and by OIT faculty, who are hired by the director to meet a client’s specific needs. In addition to consultation services, the Center co-sponsors workshops in the local business community. Most workshops are offered at a nominal fee.

The Small Business Development Center is funded through the federal Small Business Administration, state lottery funds and OIT. Approximately 200 businesses use the Center each year.

Student Affairs

Joseph P. Holliday, Ed.D., Vice President for Student Affairs and Enrollment Management
Erin M. Foley, Ph.D., Dean of Students
Connie I. Dernbach, Executive Secretary
College Union 217
(541) 885-1010
joe.holliday@oit.edu

An integrated program of support services and supervision of student life is offered by the Office of Student Affairs. These programs and services include: Admissions, Athletics, Career Services, the Center for Learning and Teaching (CFLAT), Counseling and Testing, Disability Services, Financial Aid, Housing and Residence Life, Student Health, Tech Opportunities Program (TOP) and Student Development/Associated Students (ASOIT).

The OIT Institutional Research Office also reports to the Division.

The Vice President for Student Affairs and his staff maintain close relationships with students and student organizations and are available for consultation and collaboration on all matters pertaining to student well-being.

Center for Learning and Teaching (CFLAT)

Angela Aguiar, Director
Sam Murphy, Student Success Coordinator
Laura Reid, First Year Experience Coordinator
Karlene Christensen, Office Manager
Learning Resources Center, 229
(541) 885-1791

The Center for Learning and Teaching is a multi-purpose facility designed to enrich both learning and teaching at OIT. CFLAT provides tutoring in many academic subjects, academic success classes, accommodations for students with disabilities, test proctoring, a computer laboratory and the campus writing center. A media collection and a video system used in conjunction with academic classes are also housed at the Center. In addition, CFLAT coordinates new student registration for the Klamath Falls campus, as well as new faculty orientation workshops, including the September Institute for New Faculty. It provides ongoing support for faculty to help improve teaching effectiveness and instructional skills. CFLAT is an integral part of OIT’s student success initiatives. Placement testing and some other standardized testing programs are also offered.

Housing and Residence Life

Mandi Clark, Director of Housing and Residence Life
Housing Office Residence Hall, A 151
(541) 885-1094
housing@oit.edu
www.oit.edu/housing

Housing and Residence Life encourages self-responsibility, a necessary ingredient for the accomplishment of academic, social and personal objectives. Accordingly, every attempt is made to provide the environment to accomplish this aim. Studies have indicated that much of the knowledge required for success in life is gained outside the classroom.

OIT’s Housing and Residence Life program provides a vital aspect of a student’s educational experience. Emphasis is on providing accommodations that are attractive, safe, reasonably priced and that offer stimulating programs that satisfy individual needs for privacy, community life, diversity in living arrangements and educational growth. In the Housing Office, students can make arrangements for room and board, receive assistance with personal matters, consult with the program staff, make suggestions for improvements, work out financial details and receive assistance for a variety of related housing concerns and interests.
Residence facilities at OIT are operated on a self-supported financial basis and house up to 450 male and female students. Living in college housing relieves the student of many time-consuming and expensive tasks, including meal preparation, dish washing and other housekeeping chores and driving to and from campus. With this extra time and financial savings, students are better able to devote more energy to their studies, to independent and non-academic learning experiences, to recreational and stress-relieving pursuits and to making new and often lifelong friends.

Information about on-campus housing is sent to all students admitted to OIT. The meal account for residents is either a desent to all students admitted to OIT. The Information about on-campus housing is lifelong friends.

Applications for on-campus housing should be completed and returned as soon as possible to the Housing and Residence Life Office. While space is guaranteed to new students who apply before May 1, late applicants may not receive a housing assignment.

Room-and-Board Rates
Room-and-board charges at OIT are approved by the Oregon State Board of Higher Education and are announced publicly after approval. Current rate information and any other information concerning housing and Campus Dining operations can be obtained from the Housing and Residence Life Office, OIT, 3201 Campus Dr., Klamath Falls, OR 97601-8801, or online at www.oit.edu/housing.

Student Health Center

Alden B. Glidden, M.D., Medical Director
Marilyn Gran-Moravec, R.N., M.S.N., Administrative Director

Semon Hall, 115
(541) 885-1800
health@oit.edu

The Student Health Center provides general medical care for illnesses and accidents, medical referral and counseling. Students taking six or more credit hours are entitled to and encouraged to use the Health Center. Other students can use the Health Center if they pay the health fee. A registered nurse, nurse practitioner and health educator are available for patient care. A physician is available by appointment during posted hours. Health services are not available to dependents of students or to faculty or staff.

Services

Services provided by the Student Health Center include diagnosis and treatment of acute and chronic illnesses, family planning and counseling, routine laboratory procedures, immunizations, health education and care of minor injuries and emergencies. Major emergencies are referred to the hospital located near the campus. A publication of the Student Health Center describes all services in detail. Services are not available for students at off-site locations.

Fees/Charges

Students taking six or more credit hours pay a student-health fee for basic health services, including nursing and physician care at the Student Health Center. Additional charges may be necessary for medications, treatments, supplies, immunizations and laboratory tests. All medical expenses rendered outside the Student Health Center from private physicians or hospitals are the student’s financial responsibility.

Requirements (must be fulfilled before registration)

The following health requirements must be fulfilled before registration:

1. A completed health history and immunization form which includes a completed Tuberculosis Risk Assessment. This form is mailed to all students when they are accepted for admission.

2. Verification of immunizations:
   a. Diphtheria-tetanus booster within the last 10 years (per ORS 433.284).
   b. Two doses of measles/mumps/rubella (MMR), required by Oregon Laws (ORS 433.282 and ORS 433.284) for all students taking 6 or more credits born on or after Jan. 1, 1957.

International students must have at least one documented MMR vaccine on file at the Student Health Center prior to the student attending any classes (per OAR 333-050-0130, ORS 433.282 and ORS 433.284).

Verification of immunizations must be in the form of a vaccination record or signed statement by a physician. Hepatitis A/B, varicella (chickenpox) and meningococcal vaccines are recommended.

Insurance

OIT provides a mandatory limited health-insurance program for all students taking nine credit hours or more during the Fall, Winter and Spring terms. The coverage is a minimum plan purchased automatically for students and is designed to assist with medical expenses for minor illnesses and injuries.

A voluntary extended major-medical insurance program also is offered. It provides additional coverage and major medical benefits for students and their eligible dependents.

International students and students in specific programs are required to purchase major-medical insurance. A waiver is possible.
under certain circumstances. (Please contact the Business Office or Student Health Clinic for more information.)

Insurance, limited or major-medical, is available during the summer. Visit the Student Health Center to learn more about insurance coverage.

Tech Opportunities Program

Joan Loustalet, Director
Mariana Peoples, Academic Specialist
Learning Resources Center, 233
Phone (541) 885-1125
TOP@oit.edu
www.oit.edu/TOP

The Tech Opportunities Program (TOP) is a federally funded (Student Support Services TRIO) academic support program designed to assist highly motivated students who are also low income, first generation or students with disabilities. TOP staff work closely with participating students to comprehensively assess academic and financial needs and to develop personalized plans for college success. Participants may be eligible for a variety of academic support services, including group and/or individual tutoring and related support; mentoring; networking with other students; college-success workshops and classes; additional academic advising; and limited financial assistance. TOP students also have access to their own computer lab and study area.

Student Development

Jane Rider, Director, Student Development, (541) 885-1389
Deanne Pandozzi, SEVIS Coordinator and Student Programs Assistant, (541) 885-1847
Chris Frazier, Student Programs Coordinator (541) 885-1392

College Union, Room 108
(541) 885-1825

Campus Activities

College Union, Room 223A
Lounge Phone: (541) 885-1832

Campus Activities (CA) funds quality social, cultural, arts and recreational programs for all OIT students. Funding is solely based on incidental fees and admission costs to programs are either low or free to OIT students. The CA student staff is selected during spring term each year. To get involved or to apply for a position, contact Student Development at (541) 885-1390 or visit the CA Web page.

Diversity Center (DC)

College Union, Room 225
(541) 885-1369

The Diversity Center is located upstairs in the College Union. A lounge with new furniture, equipment, computers and a small kitchen space is available to all students. The DC provides numerous programs throughout the year including weekly coffee hours, film festivals, art exhibits, ethnic dinners, such as Asian New Year, the annual International Dinner, Diversity Week activities, MLK Celebration and other speakers and entertainment. In addition, advisement is provided to a variety of ASOIT recognized student clubs, including the International Student Club, Native American Student Club, M.E.C.h.A. and others. For information on starting a club or organization, visit the ASOIT Web page or contact Student Development at (541) 885-1826.

Fraternities/Sororities

The Greeks are a long-standing presence on campus and a sorority is currently being formed. The fraternity, Phi Delta Theta, is an active organization on campus. Contact the ASOIT office for more information.

Multicultural and International Student Services

College Union, Room 108
(541) 885-1389, (541) 885-1390, (541) 885-1847
Lounge Phone: (541) 885-1369

Multicultural and International Student Services are available through the Office of Student Development. The Diversity Center in the College Union provides a lounge space for all students. This department promotes policies, programs and activities that contribute to a broader understanding of people and their cultures. This office is a resource for minority and international students. A small lounge with computers is provided for students to gather, study, socialize and plan activities. Assistance is available for questions related to BCIS regulations, SEVIS and student visas, as well as personal, academic and social adjustment. The office facilitates the Leadership and Diversity Scholarship Program and provides assistance and outreach for a number of community cultural programs. These include events such as the annual International Dinner, Diversity Center Coffee Hours, an annual Diversity Week event, Martin Luther King, Jr., Celebration, along with various speakers, films and arts programs. In addition, advisement is provided to a variety of ASOIT recognized student clubs, including the International Student Club, Native American Club, M.E.C.h.A. and others.
New Student Orientation (NSO)

New Student Orientation (NSO) is coordinated through Student Development by a student team. This program is designed to give students a chance to meet and also socialize with professors before classes begin. NSO also provides activities, workshops, barbecues, dances and a variety of other events and information to incoming students. An Orientation handbook is provided to students when they first arrive. This includes a schedule of events and activities occurring the weekend prior to the start of classes in the fall when Orientation is held. International students participate in International Club-sponsored activities during the first weeks of the term; they also meet individually and with the SEVIS Coordinator and receive special welcome packets specifically designed for incoming international students. Many other campus clubs, organizations and programs volunteer their time to assist with New Student Orientation. If you would like to get involved as either a volunteer or a student staff member, contact Student Development.

Organized Campus Clubs (OCC)

Student clubs and organizations add another important dimension to student life. ASOIT funds more than 50 recognized student organizations, including clubs related to various academic disciplines, special interests, sports, recreation, ethnic and social activities. Joining a club is a great way to meet new people and pursue common interests in a relaxed setting. A current roster of organizations is available from ASOIT or Student Development. Super Club Sign-Up is an annual event held at the beginning of the Fall Term, as well as at key times during the academic year. OCC representatives are an integral part of the Student Senate and all representatives attend the general meeting held at 5:30 p.m. on every second and fourth Monday of the month during the regular school year. For information on starting a club or organization, visit the ASOIT Web page at http://asoit.org or contact the ASOIT office at (541) 885-1825.

Outdoor Program (OP)

Trevor Oswald, Adviser, (541) 885-1036
College Union, Room 214
(541) 885-1834

The Outdoor Program (OP) provides an opportunity to participate in various outdoor activities planned for student enjoyment, including, but not limited to, rafting, caving, mountain-climbing, hiking, deep sea fishing, snowboarding and skiing. Most trips are offered at little or no cost. No previous experience is necessary to enjoy the events the OP offers, since the activities are planned for beginners and advanced adventurers alike. In addition to sponsoring trips, the OP also offers low-cost rentals of equipment for a variety of outdoor activities. If you are planning a weekend expedition and don’t have the money to buy expensive equipment, the OP rents canoes, tents, backpacks, cross-country skis, snowboards and more at a nominal cost. The Outdoor Program office is located on the second floor of the College Union, in the game room area.

Student Leadership/ASOIT

The Associated Students of Oregon Institute of Technology (ASOIT) invites the participation and involvement of all students in the governance process. Student involvement has been shown to correlate with academic and career success. Programs and activities are aimed at fostering a sense of community at OIT. A sense of connection and community has also been shown to correlate with student success. As a student, you can be involved in a variety of ways. You could start or join a campus club or organization, serve on a committee, run for office or apply for various student staff positions. For further information on any of these options, visit the ASOIT Web page at http://asoit.org or visit the OIT Web page (current students, campus life, student government). You may also contact Student Development at (541) 885-1828, or the director of Student Development at (541) 885-1389.
Student Senate

The purpose of the Student Senate is to represent the students of OIT through effective communication with all members of the university community. The Senate encourages the development of campus organizations and activities and the usage of educational, cultural, social and recreational opportunities for students. The goal of the Senate is to adequately represent and interpret student opinion as related to the information on campus policy, while promoting unity and fellowship among the students of the university community.

Students can participate within the Student Senate by getting involved with one of the many campus commissions or serving on a committee of the Student Senate. Sign-up opportunities are available during New Student Orientation by visiting the ASOIT table at the Opportunity Fair or speaking to the ASOIT President, Vice President, or the Director of Student Development. The Student Senate holds a general meeting for campus clubs at 5:30 p.m. on every second and fourth Monday of the month during the regular school year.

Student Media

Student Newspaper—The Edge

Marye Hefty, Adviser
(541) 885-1524

The Edge Office, College Union
(541) 885-1835

OIT’s award-winning student newspaper, The Edge, is a weekly tabloid newspaper written by students from all majors and produced by a student staff. Published Fall, Winter and Spring terms under sponsorship of the Student Senate, it is distributed without charge to students. Academic credit is available by enrolling in journalism courses.

KTEC Radio Station
89.5 MHz FM

Kevin Brown, Adviser, (541) 885-1891

KTEC Office: (541) 885-1840

KTEC-FM, a 200-watt non-commercial radio station, is licensed to the Oregon State Board of Higher Education by the Federal Communications Commission and is the oldest FM station in Southern Oregon. KTEC is operated by students and programmed to serve the interests of the OIT student body and the Klamath Falls community. Throughout the school year, KTEC provides a varied program schedule of music, educational material and special events. Any student interested in radio broadcasting is encouraged to join KTEC. As KTEC staff members, students will practice and perfect their knowledge by producing both live and pre-programmed broadcasts. KTEC’s studio is located in the southeast corner of the College Union.

Oregon Technical Broadcasting (OTB)

David Westhart, Adviser
Paul Dingman, Adviser

College Union, Room 112
(541) 885-0682
otb@oit.edu

OTB is the student-run video production program at OIT. OTB provides campus entertainment through the creation of a sketch comedy show called Outside the Box. Two new episodes are created each term. Additionally, OTB films campus events, operates the closed-circuit TV station on campus and provides video service to campus organizations that request them. Anyone interested in TV/video/film productions, acting or comedy is encouraged to get involved with OTB. No previous experience is necessary.

University Advancement

Vacant, Vice President

University Advancement Building
(541) 885-1130

University Advancement builds and enhances positive relationships with students, faculty, staff, alumni and friends of the university through initiatives and activities that embody institutional values and position Oregon Institute of Technology among the nation’s leading technological and health professions universities. Fundraising, alumni relations, grant writing and other activities stimulate and convey the distinctive role and numerous educational, research and public service contributions of OIT throughout Oregon, the nation and internationally. University advancement colleagues also staff activities of the Oregon Tech Foundation.

Alumni Relations and The Oregon Tech Alumni Association

Robin Thompson, Director of Alumni Relations

University Advancement Building
(541) 885-1132
alumni@oit.edu
www.oit.edu/alumni

The Alumni Relations office promotes interactions and loyalty of alumni and currently enrolled students towards Oregon Institute of Technology. Services and activities include regional social events, student activities, reunions and continuing-education programs. The office of Alumni Relations also works with Career Services to assist alumni in enhancing their careers or making career changes. Alumni have the opportunity to keep in touch with other alumni through the university’s alumni Web page and other
means of communications regarding their academic major and OIT.

The Oregon Tech Alumni Association, established in 1949, is guided by the Alumni Advisory Board and exists to support and promote Oregon Tech as a premier learning institution and to provide a structure for alumni affiliation. Membership is free and automatic to anyone who has completed credits at Oregon Tech. Areas of special interest for the Alumni Association include assisting the university with new-student recruitment activities, career networking, social and educational activities and the financial support of Oregon Tech. The Alumni Association is an affiliated organization of the Oregon Tech Foundation.

**Annual Giving**

*University Advancement*

(541) 885-1147
michaele.sedlock@oit.edu

As the backbone of Oregon Institute of Technology’s fundraising effort, the Annual Giving Program enhances opportunities in areas critical to the learning experience: technology upgrades, library resources and scholarships. In fact, the Annual Giving Program supports virtually every facet of university life and makes it possible for students from diverse backgrounds to benefit from the OIT experience.

The efforts of the faculty, staff, alumni, students, parents and friends of OIT are critical to the success of the Annual Giving Program. Their financial support reflects the confidence they have in the quality education offered by OIT.

**The Oregon Tech Foundation**

Krista Darrah, *Interim Executive Director*

*University Advancement Building*

(541) 885-1130

The Oregon Tech Foundation is a nonprofit organization that provides private financial support for Oregon Institute of Technology. The Foundation is governed by a Board of Directors that represents a broad range of community leaders, alumni and private benefactors. The Foundation raises funds to enhance academic programs, to support scholarships and to enrich student life. A related responsibility of the Oregon Tech Foundation is the management of private funds entrusted to it. These funds currently total above $16 million, a large part of which is committed to the support of numerous scholarships that are awarded primarily on the basis of academic achievement and financial need. The Foundation works closely with its affiliated and associated organizations, including the Oregon Tech Alumni Association, the Shaw Historical Library and the Oregon Tech Athletic Boosters.

**Veterans Services**

E. Susan Richards, *Veterans' Certifying Official*

Snell Hall, Registrar’s Office, lower level
(541) 885-1302

The veterans coordinator works closely with officials of the Veterans Administration to deliver educational benefits to a variety of veterans, selected reservists, dependents and survivors. All students, including new, transfer or returning, who expect to receive VA benefits must notify the veterans coordinator in the Registrar’s Office. The veterans coordinator certifies attendance at OIT.

The veterans coordinator also administers the satisfactory progress standards for students who are receiving educational benefits. See Veterans Satisfactory Progress Standards under the Academic Policies section of this catalog.
Governance
Oregon
University
System

The Oregon University System includes seven institutions that provide general, professional and technical educational opportunities throughout the state.

Member institutions are Eastern Oregon University, La Grande; Western Oregon University, Monmouth; Oregon Institute of Technology, Klamath Falls; Oregon State University, Corvallis; Portland State University, Portland; Southern Oregon University, Ashland; and the University of Oregon, Eugene.

The system is governed by the Oregon State Board of Higher Education, whose members are appointed by the Governor and approved by the Senate. The Board maintains a permanent staff, headed by the Chancellor of the Oregon University System, who is appointed by the Board.

Oregon State
Board of Higher
Education

Members and term expiration dates:

Kirby Dyess, President, Portland, 2008
Donald W. Blair, Vice President, Beaverton, 2008
Howard F. Sohn, Vice President, Roseburg, 2009
Hannah Fisher, Portland, 2009
Brian Fox, Ashland, 2009
James L. Francesconi, Portland, 2008
Paul Kelly, Jr., Portland, 2011
Dalton Miller-Jones, Portland, 2008
Rosemary Powers, La Grande, 2009
Preston Pulliams, Portland, 2009
Tony C. Van Vliet, Corvallis, 2009
John E. Von Schlegell, Portland, 2009

George Pernsteiner, Chancellor

President’s
Advisory Council

Mark Bansemer, Executive Director, Firmware Engineering, International Game Technology, 2010
Bill Castle, President and CEO, South Valley Bank & Trust, 2008
Mary Coucher, Vice President, Alliances and Business Development, IBM Corp., 2010
John Dey, Secretary-Treasurer, WC Ranch, Inc., 2009
Gerald (Jerry) Freschi, Wells Fargo Bank (Retired), 2008
Daniel M. Hallesy, RDMS, RDCS, RVT, Ultrasound Sales Representative, Toshiba American Medical Systems, Inc., 2011
Mike Hallgrimson, Program Management, Boeing, Portland, 2008
Denise Honzel, Healthcare Consultant, 2012
Gary Johnston, President, 7L Investments LLC, 2008
Steven Mays, President, Electronic Wood Systems, Int., 2010
Steve Pawlowski, Senior Intel Fellow, Director, Platform Architecture Planning and Technology, Intel Labs, 2010
Scott Powell, General Manager, Premier International, Inc., 2008
Larry Rapp, Electro Scientific Industries, (Retired), 2010
Patricia Smullin, President, California-Oregon Broadcasting, Inc., 2010
Paul Stewart, President and CEO, Sky Lakes Medical Center, 2011
Richard Wendt, Chairman of the Board, JELD-WEN, Inc., 2008
Bill Yoakum, Senior Manager, Major Interiors/Global Partners, Boeing Commercial Airplanes, 2010
Oregon Tech Foundation
Board of Directors

Gary Johnston ’89—President
Andy Peterson ’84—Vice President
Nancy B. Coffin—Secretary
Douglas Kintzinger—Treasurer
Lance Bishop ’82
Ralph Breitenstein, M.D.
Gregory Bulkley, M.D.
Dave Cowan ’82
Irl Davis ’71
Gerda H. Hyde
Launa Lilly ’00
Ron Loveness
Jim Lussier
Jean Pinniger
Kristi Redd ’78
Richard Siemens
Joan L. Staunton
Theodore E. Thom, D.D.S.
Charles Thompson
Don Van Luvanee
Thomas Van Thiel ’60
Nancy J. Wendt

Ex-Officio

David Woodall, Interim OIT President
William Nettles, OIT Vice President for Finance and Administration
Scott Blower, ’97 Chair, OIT Alumni Association
Krista Darrah, Interim Executive Director, The Oregon Tech Foundation
Mike Moore, OIT Athletic Boosters
Steve Mark, President, Shaw Historical Library

Emeritus Directors

Timothy Bailey
Marge Bocchi
R. Sherrill Boyd
Alan Cragmiles
William Early
Trudy Farr
Fred Foulon
John Gerbert
Winifred Hood
Susan Laubengayer
Earle M. LeVernois, M.D.
James McCobb
John Novak

Oregon Institute of Technology Administrative Offices

Interim President, David M. Woodall
Interim Provost, Gary J. Naseth
Vice President for Finance and Administration, William R. “Bob” Nettles
Vice President for Student Affairs and Enrollment Management, Joseph P. Holliday
Associate Vice President for Strategic Partnerships, Dolores “Lita” Colligan
Chief Information Officer, Andy Abbott
School Academic Chair, School of Engineering, Technology, and Management, Charlie Jones
School Academic Chair, School of Health, Arts and Sciences, Bradley Burda

Admissions, John Duarte, Director
Alumni Relations/Oregon Tech Alumni Association, Robin Thompson, Director
Annual Giving, Michaele Sedlock, Director
Athletics, Mike Schell, Director
Budget Officer, Haldane Harris
Business Affairs, Jeannie Steckley, Director
Campus Dining, Christopher Dalla, Director
Career Services, David Westhart, Director
Center for Health Professions, Terri Armstrong, Interim Director
College Union, Christopher Dalla, Director
Counseling Services, Vacant, Clinical Supervisor
Dean of Students, Erin Foley
Development and Endowed Scholarships, Kathrin Walsh, Director
Disability Services, Joan Lousalet, Director

Distance Education, Barb DeKalb, Director
Facilities Services, David Ebsen, Director
Financial Aid, Tracey Lehman, Director
Geo-Heat Center, John Lund, Director
Housing and Residence Life, Mandi Clark, Director
Human Resources and Affirmative Action, Ron McCutcheon, Director
Information Technology Services, Andy Abbott, Chief Information Officer
Institutional Research, Anji Duchi, Director
Learning and Teaching, Center for, David Westhart, Director
Library, Karen Kunz, Interim Director
OIT at Boeing, Nathan Mead, Director
Oregon Renewable Energy Center, Tom Chester, Director
Paper Owl Bookstore, Lane Hickman, Director
Portland Operations, Richard Swanson, Director of Facilities and Contracts
Public Relations, Valeree Lane, Director
Registrar’s Office, Marla Edge, Registrar
Safety, Ed Guy, Director
Small Business Development Center, Jamie Albert, Director
Sponsored and Pre-College Programs, Gayle Yamashiki, Director
Student Development, Jane Rider, Director
Student Health Center, Marilyn Gran-Moravec, Administrative Director
Tech Opportunities Program, Joan Lousalet, Director
Administration


Jamie Albert (1984), Assistant Professor, Director, Small Business Development Center. B.S. (1978), University of Wisconsin-Eau Claire; M.B.A. (1991), Southern Oregon University.


Mandi Clark (2004), Director, Housing and Residence Life. B.A. (1997), Kansas State University; M.S. (1999), University of Nebraska.


Dolores “Lita” Colligan (2007), Associate Vice President for Strategic Partnerships. B.A. (1975), University of California, Santa Cruz.


Christopher Dalla (1989), Director, Campus Dining; Director, College Union. B.S. (1972), Cornell University; M.S. (1987), University of Pennsylvania, Philadelphia.


Krista Darrah (2006), Director, Fiscal Operations; Assistant Executive Director, Oregon Tech Foundation. B.S. (1999), Oregon Institute of Technology.

Barbara DeKalb (2007), Director, Distance Education. B.S. (1970), Linfield College; M.S. (1972), Washington State University.


David Ebsen (1999), Director, Facilities Services.


Andrea “Andi” Ehlers (2008), Administrative Coordinator, Housing and Residence Life.


Celina Foster (2003), Executive Secretary to V.P. for Finance and Administration.

Honor Christine Frazier (2008), Student Programs Coordinator, Student Development. A.A. (2006), B.S. (2008), Oregon Institute of Technology.


Michael Garrard (2007), Coordinator, Sports Marketing/Promotion.
Alden Glidden (1978), Associate Professor, Medical Director, Student Health Center. B.S. (1965), University of Michigan, Ann Arbor; M.D. (1969), Wayne State University.

Marilyn Gran Moravec (2005), Director, Student Health Center. B.S.N. (1980), University of Washington; M.S.N. (2002), Oregon Health Science University.


Sharon Hanson (1986), Coordinator, Media Services.


Marilyn Herrington (2001), Custodian Supervisor, Physical Plant.


Diana Kellstrom (2007), Executive Secretary for Provost/Vice President for Academic Affairs.

Sandra King (1990), Payroll Supervisor, Business Office.


Joan Loustalet (2004), Director, Disability Services; Director, Tech Opportunities Program. B.A. (1985), M.A. (1990), California State University, Chico.


Anne Malinowski (1990), Office Manager, Plant Operations.


Cheryl Meyers (1989), Executive Assistant to Associate Provost, Academic Affairs.


Bryan Mueller (2005), Women’s Soccer Coach.


J. Samuel Murphy (1990), Assistant Professor, Coordinator, Student Success. B.A. (1973), East Carolina University; M.S. (1979), Gallaudet University; Ph.D. (1986), University of Arizona.


Trevor Oswald (2004), Manager, College Union Operations. B.S. (2005), Oregon Institute of Technology.

Deanne Pandozzi (2002), Student Programs Coordinator.

Adria Paschal (2007), Executive Secretary to the President.

Wendy Pedersen (1999), Associate Registrar. B.S. (1997), Oregon State University; M.S. (2005), Southern Oregon University.


Laura Reid (2007), Coordinator, First Year Experience. B.S. (2005), Oregon Institute of Technology.


Josh Rindfleisch (2005), Senior Location Producer. B.A. (2002), Idaho State University.


Sandra Setters (1989), Benefits Officer, Human Resources.


Kathleen Starkey (1999), Office Coordinator, Admissions.


Greg Stewart (2004), Head Women’s Softball Coach. B.S. (1992), Sterling College.


Robin Thompson (2008), Director, Alumni Relations. B.S. (1980), West Virginia University; M.S. (1993), University of Utah.

Alice “Diane” Tiefel (2000), Assistant Program Director, Boeing.

Vernon VanCamp (1987), Maintenance Supervisor, Housing and Residence Life, College Union.


Jeff Wiseman (2001), Assistant Director, Bookstore.

David Woodall (2003), Interim President. B.S. (1967), Hendrix College; M.S. (1968), Columbia University, New York City; Ph.D. (1976), Cornell University.

Gayle Yamasaki (1994), Director, Sponsored and Pre-College Programs. A.A. (1973), College of Marin; B.A. (1975), Humboldt State University; M.Ed. (1977), University of Arizona.

This listing reflects faculty for the 2008-2009 academic year. In some cases, changes taking effect during 2009-2010 are included in the faculty lists under the department descriptions.


Raymond “Jay” A. Bockelman (2003), Associate Professor and Program Director, Computer Systems Engineering Technology. B.S. (1982), Portland State University; M.S. (1992), University of Oregon.


Todd W. Breedlove (1999), Associate Professor, Computer Systems Engineering Technology. B.S. (1996), Oregon Institute of Technology; M.S. (1999), Southern Oregon University.


James H. Bryan (2001), Instructor, Allied Health Partnerships, Paramedic Education. B.S. (1981), Southern Oregon University; M.D., Ph.D. (1990), Oregon Health Sciences University.


Ralph A. Carestia (1990), Professor, Computer Systems Engineering Technology. B.S. (1974), University of Southern Colorado, Pueblo; M.S. (1980), San Jose State University.


Christopher L. Caster (1999), Assistant Professor, Medical Imaging Technology. A.A. (1975), Oregon Institute of Technology; B.S. (1979), Eugene Bible College; B.S. (1996), Oregon Institute of Technology; M.Ed. (2002), University of Phoenix.

Burton D. Clark (1998), Associate Professor, Natural Sciences. B.S. (1979), University of Massachusetts, Amherst; Ph.D. (1986), Ohio State University.

Mark H. Clark (1996), Professor, Humanities and Social Sciences. B.S. (1984), Rice University; M.A. (1987), University of Houston; Ph.D. (1992), University of Delaware.


Michael A. Cornachione (1992), Professor, Civil Engineering. B.S. (1975), University of Virginia, Charlottesville; M.S. (1992), Michigan Technological University. Registered Professional Engineer, Oregon.


David Culler (2007), Associate Professor, Mechanical and Manufacturing Engineering and Technology. A.A. (1985), University of New Mexico, Alburquerque; B.S. (1988), M.S. (1990), Ph.D. (1994), New Mexico State University, Las Cruces.


Kate P. Darling (2001), Instructor, Allied Health Partnerships, Paramedic Education. A.A.S. (1997), Oregon Health Sciences University; B.A. (1976), College of the Atlantic.


Marian S. Ewell (2001), Assistant Professor, Allied Health Partnerships, Clinical Laboratory Science. B.S. (1965), Southern Oregon University, B.S. (1968), University of Oregon. MT (ASCP), CLS (NCA) registered.


Polly Francis (1990), Professor, Mathematics. B.A. (1980), Berea College; M.S. (1989), Southern Oregon University.

Abraham Furman (2001), Assistant Professor, Allied Health Partnerships, Clinical Laboratory Science. B.S. (1970), San Diego State University; B.S. (1972), Loma Linda University; Ph.D. (1980), University of California, Los Angeles. MT (ASCP) registered.


David S. Geigle (2001), Associate Professor, Management. B.S. (1975), University of Utah; M.B.A. (1979), Golden Gate University; D.B.A. (1999), Nova Southeastern University.

Donald “Ralph” Gibbs (2004), Assistant Professor, Management. B.S. (1981), Portland State University; M.B.A. (1999), Embry-Riddle Aeronautical University.


Steven Goodstein (2001), Assistant Professor, Allied Health Partnerships, Clinical Laboratory Science. B.A. (1966), San Jose State University; M.S. (1978), Portland State University. MT (ASCP) registered.


Christine M. Harwood (2002), Assistant Professor and Program Director, Dental Hygiene. A.A.S. (1968), Oregon Health Sciences University; B.S. (1997), Oregon Institute of Technology; M.S. (2000), Portland State University.


Alishia A. Huntoon (2005), Assistant Professor, Humanities and Social Sciences. B.S. (1999), University of Wisconsin, Stevens Point; M.S. (2002), Ph.D. (2005), Washington State University.


Hui Yun Li (2006), Associate Professor, Natural Sciences. B.S. (1988), National Taiwan University; M.S. (1990), Michigan State University; Ph.D. (1994), University of Massachusetts, Amherst.

Roger V. Lindgren (1999), Associate Professor, Civil Engineering. B.S. (1989), University of Alberta; Ph.D. (2005), Portland State University. Registered Professional Engineer, Alberta.


LeAnn Mauperin (1997), Associate Professor, Medical Imaging Technology. B.S. (1992), Oregon Institute of Technology; M.Ed. (2001), University of Phoenix.


Marla Miller (1999), Associate Professor, Management. B.S. (1986), Southern Oregon University; M.S. (1994), University of Portland.


Julianne M. Murray (1987), Associate Professor, Communication. B.A. (1975), Stanford University; M.A. (1979), Reed College; Ph.D. (1992), University of Oregon.


Mary “Molly” R. O’Shaughnessy (1999), Associate Professor, Natural Sciences. B.S. (1978), University of New Hampshire; D.V.M. (1992), Ohio State University.


Richard W. Pohl (1983), Professor, Humanities and Social Sciences. B.S. (1970), Iowa State University; Ph.D. (1978), University of Minnesota.


Mary D. Prange (2005), Instructor, Dental Hygiene. A.S. (1976), Cerritos College.


Kathleen A. Sale (1992), Associate Professor, Natural Sciences. B.S.N. (1986), Oregon Institute of Technology; M.S. (1998), Southern Oregon University.

Joseph E. Sarsenski (1998), Professor, Civil Engineering. B.S. (1964), Clarkson University; M.S. (1967), Cornell University; Ph.D. (1978), University of Connecticut.


Hong “Randy” Y. Shih (1984), Professor, Manufacturing and Mechanical Engineering and Technology. B.S. (1979), The Chung-Yuan University, Taiwan; M.S. (1984), University of Nebraska, Lincoln.


Sean W. St.Clair (2004), Assistant Professor, Civil Engineering. A.S. (1996), Ricks College; B.S. (1998), Utah State University; M.S. (2000); Ph.D. (2004), Georgia Institute of Technology.

William J. Stuart (2004), Assistant Professor, Manufacturing and Mechanical Engineering and Technology. B.S. (1969), University of Nevada, Reno; M.S. (1972), University of Southampton, UK.

Wangping Sun (2005), Assistant Professor, Manufacturing and Mechanical Engineering and Technology. B.S. (1988), Northern Jiangtong University; M.S. (2002), Ph.D. (2002), Kansas State University.

Ronald H. Swisher (1976), Professor, Natural Sciences. B.A. (1972), Pomona College; Ph.D. (1976), University of Oregon.


Richard Torres (2007), Associate Professor, Natural Science. B.S. (1982), Brigham Young University; M.S. (1989), California State University, Long Beach; Ph.D. (1996), Idaho State University, Pocatello.


Valerie J. Vance (1990), Professor, Communication. A.A. (1976), Big Bend Community College; B.A. (1979), Western Washington University; M.A. (1988), New Mexico State University, Las Cruces.


Carrie R. Wittmer (2005), Assistant Professor, Natural Sciences. B.A. (1991), St. Mary’s College, California; M.S. (1993), Lesley College.

Lawrence J. Wolf (1998), Professor, Manufacturing and Mechanical Engineering and Technology. A.A. (1959), Harris-Stowe State University; B.S.M.E. (1961), M.S.M.E. (1962), D.Sc. (1971), Washington University; St. Louis; Registered Professional Engineer, Oregon, Missouri; OTF President Emeritus (Designate); Distinguished Service Professor of the Oregon University System.


Cheryl L. Zelinsky (1997), Associate Professor, Medical Imaging Technology. A.A. (1975), Ohlone College; B.A. (1991), Sr. Mary’s College, California; M.S. (2002), Southern Oregon University; Registered Technologist (R), ARRT, CRT (R, F), Registered Diagnostic Medical Sonographer, RDMS (OB-GYN, ABD, BR).

Gary L. Zimmerman (1995), Professor, Medical Imaging Technology. B.S. (1984), Oregon Institute of Technology; M.S. (1993), University of Wisconsin, Oshkosh; Registered Technologist (R), (MR), (CT), ARRT.

Raenelle J. Zumbo (1976), Assistant Professor, Communication. B.A. (1969), University of LaVerne; M.S. (1985), Southern Oregon University.

### OIT Faculty Senate Presidents

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### Emeritus Faculty

- **Marshall Ager**, B.S., Assistant Professor, Civil Engineering and Geomatics, 1977-2004.
- **Jesse Crabtree**, Assistant Professor, Civil Engineering Technology, 1947-1976.
- **G. Gene Culver**, B.S., Associate Professor, Associate Director, Geo-Heat Center, 1960-1995.
- **Jeanne Ford**, R.N., Assistant Professor, Administrative Director, Student Health Service, 1964-1983.
- **Charles C. Glover**, B.S., Associate Professor, Diesel Power Technology, 1966-1990.
Harold E. Godfrey, Jr., B.S., Assistant Professor, Medical Imaging Technology, 1975-1997.


Charles E. Harris, M.S., Professor, Department of Extended Studies and Summer Session, 1976-1996.


Margaret Huntley, Professor, Management, 1975-2006.

Herbert H. Jolliff, M.S., Professor and Department Chair, Mathematics, 1968-1999.


Cecil R. Lake, M.Ed., Professor, Director of Planning and Research, 1949-1986.


John W. Lund, Ph.D., Professor, Civil Engineering, and Director, Geo-Heat Center, 1967-1999.


Richard M. Moore, Ph.D., Professor and Director, Portland Operations, 1972-1997.


JoAnne M. Ogborn, M.S., Professor, Director, Extended Studies and Summer Session, 1968-1996.


Ralph L. Pettit, M.S., Professor, Humanities and Social Sciences, 1969-1986.


Margaret E. Reid, M.S., Associate Professor, Nursing, 1981-1997.


Mata A. Rust, M.S., Professor, Communication Department, 1972-1999.

Edward Silling, Ph.D., Professor, Communication Department, 1975-2003.


Donald R. Skudsstad, Ph.D., Professor, Manufacturing and Mechanical Engineering and Technology, 1976-1996.


Pauline Stuedli, Assistant Professor, Dental Hygiene, 1977-1999.


Frances S. Svanevik, Ph.D., Professor, Natural Sciences, 1966-1997.


David J. Vargas, M.S.C.E., Associate Professor, Civil Engineering Technology, 1985-1997.


David C. Warner, Ph.D., Professor, Natural Sciences, 1984-2002.

Gary E. Wehr, M.A., Professor, Department Chair, General Studies, 1969-1996.


Emeritus Administration

Mary J. Bradford, M.S., Aquatics Director/Softball Coach, 1975-2004

Nancy K. Cox, Executive Secretary to the President, 1961-1999.


Christian H. Eismann, Ph.D., Professor and Dean of Academic Affairs, 1986-1996.


April C. Leifeste, A.A., Executive Secretary, Academic Affairs, 1972-2006

Paul Lienau, M.S., Professor and Director of the Geo-Heat Center, 1968-1997.


Robert Thompson, B.S., Sports Information Director, Athletics, 1993-2007

Gary L. Willhide, M.S., Director, Public Affairs, 1988-2005


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